Grizzly Industrial, Inc.®

MODEL G0509 & G0509G
16" x 40" LATHE
OWNER'S MANUAL

MODEL G0509G PROFESSIONAL
GUNSMITH'S LATHE SHOWN

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#CR9246 PRINTED IN CHINA

⚠ WARNING!

This manual provides critical safety instructions on the proper setup, operation, maintenance and service of this machine/equipment.

Failure to read, understand and follow the instructions given in this manual may result in serious personal injury, including amputation, electrocution or death.

The owner of this machine/equipment is solely responsible for its safe use. This responsibility includes but is not limited to proper installation in a safe environment, personnel training and usage authorization, proper inspection and maintenance, manual availability and comprehension, application of safety devices, blade/cutter integrity, and the usage of personal protective equipment.

The manufacturer will not be held liable for injury or property damage from negligence, improper training, machine modifications or misuse.

⚠ WARNING!

Some dust created by power sanding, sawing, grinding, drilling, and other construction activities contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm. Some examples of these chemicals are:

- **Lead from lead-based paints.**
- **Crystalline silica from bricks, cement and other masonry products.**
- **Arsenic and chromium from chemically-treated lumber.**

Your risk from these exposures varies, depending on how often you do this type of work. To reduce your exposure to these chemicals: Work in a well ventilated area, and work with approved safety equipment, such as those dust masks that are specially designed to filter out microscopic particles.

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INTRODUCTION

Foreword

We are proud to offer the Model G0509/G0509G 16" x 40" Lathe. This machine is part of a growing Grizzly family of fine metalworking machinery. When used according to the guidelines set forth in this manual, you can expect years of trouble-free, enjoyable operation and proof of Grizzly's commitment to customer satisfaction.

We are pleased to provide this manual with the Model G0509/G0509G. It was written to guide you through assembly, review safety considerations, and cover general operating procedures. It represents our effort to produce the best documentation possible.

The specifications, drawings, and photographs illustrated in this manual represent the Model G0509/G0509G 16" x 40" Lathe as supplied when the manual was prepared. However, owing to Grizzly's policy of continuous improvement, changes may be made at any time with no obligation on the part of Grizzly. For your convenience, we always keep current Grizzly manuals available on our website at **www.grizzly.com**. Any updates to your machine will be reflected in these manuals as soon as they are complete. Visit our site often to check for the latest updates to this manual!

Contact Info

If you have any comments regarding this manual, please write to us at the address below:

Grizzly Industrial, Inc.
C/O Technical Documentation Manager
P.O. Box 2069
Bellingham, WA 98227-2069
Email: manuals@grizzly.com

We stand behind our machines. If you have any service questions or parts requests, please call or write us at the location listed below.

Grizzly Industrial, Inc.
1203 Lycoming Mall Circle
Muncy, PA 17756
Phone: (570) 546-9663
Fax: (800) 438-5901
E-Mail: techsupport@grizzly.com
Web Site: http://www.grizzly.com

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

MODEL G0509 16" X 40" LATHE

Product Dimensions:

Weight..... 3100 lbs.
Length/Width/Height.....76-3/8 x 33-7/16 x 51-3/16 in.
Foot Print (Length/Width)..... 76 x 21-1/2 in.

Shipping Dimensions:

Type..... Wood Crate
Content..... Machine
Weight..... 3245 lbs.
Length/Width/Height..... 81 x 36 x 64 in.

Electrical:

Switch..... Magnetic Switches with Thermal Overload Protection
Switch Voltage..... 220V
Cord Length..... 6 ft.
Cord Gauge.....12 gauge
Recommended Breaker Size..... 20 amp
Plug..... No
Phase Converter..... G7978

Motors:

Main

Type.....2 Speed TEFC Induction
Horsepower.....3 - 4 HP
Voltage.....220V
Prewired.....220V
Phase.....Three
Amps.....15/10A
Speed.....3450/1725 RPM
Cycle.....60 Hz
Number Of Speeds..... 2
Power Transfer ..... Belt Drive to Gear
Bearings..... Shielded and Lubricated for Life

Coolant

Type.....Induction
Horsepower.....1/8 HP
Voltage.....220V
Prewired.....220V
Phase.....Three
Amps.....0.45A
Speed.....3450 RPM
Cycle.....60 Hz
Number Of Speeds..... 1
Power Transfer ..... Direct Drive
Bearings..... Shielded and Permanently Lubricated

Main Specifications:

Operation Info

Swing Over Bed	16 in.
Dist Between Centers	40 in.
Swing Over Cross Slide	10 in.
Swing Over Saddle	9-7/8 in.
Swing Over Gap	22 in.
Max Tool Bit Size	3/4 in.
Compound Travel	5-1/2 in.
Carriage Travel	33 in.
Cross Slide Travel	8-1/2 in.

Headstock Info

Spindle Bore	2 in.
Spindle Taper	MT#6
No Of Spindle Speeds	16
Range Of Spindle Speeds	45 - 1800 RPM
Spindle Type	D1-6 Cam Lock
Spindle Bearings	Tapered Roller

Tailstock Info

Tailstock Travel	4-3/4 in.
Tailstock Taper	MT#4
Tailstock Barrel Diameter	2 in.

Threading Info

No Of Inch Threads	45
Range Of Inch Threads	2 - 72 TPI
Range Of Longitudinal Feeds	0.002 - 0.067 in.
No Of Longitudinal Feeds	17
No Of Cross Feeds	17
Range Of Cross Feeds	0.0011 - 0.038 in./rev.
No Of Metric Threads	39
Range Of Metric Threads	0.2 - 14 mm
No Of Modular Threads	18
Range Of Modular Threads	0.3 - 3.5 MP
No Of Diametrical Threads	21
Range Of Diametrical Threads	8 - 44 DP

Dimensions

Bed Width	10 in.
Leadscrew TPI	4
Leadscrew Length	54 in.
Steady Rest Capacity	4-7/8 in.
Follow Rest Capacity	2-7/8 in.
Faceplate Size	14 in.
Leadscrew Diameter	1.120 in.
Feed Rod Diameter	0.745 in.
Floor To Center Height	45 in.

Construction

Base Construction	Cast Iron
Headstock Construction	Cast Iron
Headstock Gears Construction	Flame Hardened Steel
Bed Construction	Induction Hardened Cast Iron
Body Construction	Cast Iron
Stand Construction	Cast Iron
Paint	Epoxy

Other

Kilowatt Output.....3.077

Other Specifications:

Country Of Origin .....China
Warranty ..... 1 Year
Serial Number Location ..... Front of Headstock
Assembly Time .....2 hours

Features:

Coolant System
Foot Brake
Full Length Splash Guard
Halogen Light
Headstock Gears Run in an Oil Bath
Inch/Metric Dials
Jog Button and Emergency Stop
Precision Ground V-Bed is Made of Meehanite Casting
Threading Dial
Totally Enclosed Universal Gearbox Allows Cutting of Inch, Metric, Whitworth, Module, and Diametral Threads

Accessories Included:

#4 to 6 Morse Taper Spindle Nose Sleeve
12" 4-Jaw Chuck
14" Face Plate
8" 3-Jaw Chuck with 2 Piece Jaws
Center Sleeve
Centers
Follow Rest
Manual
MT#4 Dead Center
Quick Change Tool Post
Service Tools
Steady Rest
Toolbox

MACHINE DATA SHEET

Customer Service #: (570) 546-9663 · To Order Call: (800) 523-4777 · Fax #: (800) 438-5901

MODEL G0509G 16" X 40" 3-PHASE GUNSMITH METAL LATHE

Product Dimensions:

Weight..... 2976 lbs.
Length/Width/Height.....76-3/8 x 33-7/16 x 51-3/16 in.
Foot Print (Length/Width)..... 76 x 21-1/2 in.

Shipping Dimensions:

Type..... Wood Crate
Content..... Machine
Weight..... 3248 lbs.
Length/Width/Height..... 82 x 33 x 65 in.

Electrical:

Switch.....Jog Button and Emergency Stop
Switch Voltage.....220V
Cord Length..... 6 ft.
Cord Gauge.....12 gauge
Recommended Breaker Size..... 20 amp
Plug..... No
Phase Converter..... G7978

Motors:

Spindle

Type.....2-Speed Induction
Horsepower.....3 - 4 HP
Voltage.....220V
Prewired.....220V
Phase.....Three
Amps.....17/8.5A
Speed.....1750/875 RPM
Cycle.....60 Hz
Number Of Speeds..... 2
Power Transfer ..... Belt Drive to Gear
Bearings..... Shielded and Lubricated for Life

Coolant

Type.....Induction
Horsepower.....1/8 HP
Voltage.....220V
Prewired.....220V
Phase.....Three
Amps.....0.45A
Speed.....3450 RPM
Cycle.....60 Hz
Number Of Speeds..... 1
Power Transfer .....Direct Drive
Bearings..... Shielded and Permanently Lubricated

Main Specifications:

Operation Info

Swing Over Bed	16 in.
Dist Between Centers	40 in.
Swing Over Cross Slide	10 in.
Swing Over Saddle	9-7/8 in.
Swing Over Gap	22 in.
Max Tool Bit Size	3/4 in.
Compound Travel	5-1/2 in.
Carriage Travel	33 in.
Cross Slide Travel	8-1/2 in.

Headstock Info

Spindle Bore	2 in.
Spindle Size	3-9/64 in.
Spindle Taper	MT#6
No Of Spindle Speeds	16
Range Of Spindle Speeds	45 - 1800 RPM
Spindle Type	D1-6 Camlock
Spindle Bearings	Super High Precision

Tailstock Info

Tailstock Travel	4-3/4 in.
Tailstock Taper	MT#4
Tailstock Barrel Diameter	2 in.

Threading Info

No Of Inch Threads	45
Range Of Inch Threads	2 - 72 TPI
Range Of Longitudinal Feeds	0.002 - 0.067 in.
No Of Longitudinal Feeds	17
No Of Cross Feeds	17
Range Of Cross Feeds	0.0011 - 0.038 in./rev.
No Of Metric Threads	39
Range Of Metric Threads	0.2 - 14 mm
No Of Modular Threads	18
Range Of Modular Threads	0.3 - 3.5 MP
No Of Diametrical Threads	21
Range Of Diametrical Threads	8 - 44 DP

Dimensions

Bed Width	10 in.
Leadscrew TPI	4
Leadscrew Length	54 in.
Steady Rest Capacity	1/2 - 4-1/2 in.
Follow Rest Capacity	1/2 - 2-1/2 in.
Faceplate Size	14 in.
Leadscrew Diameter	1.120 in.
Feed Rod Diameter	0.745 in.
Floor To Center Height	47 in.

Construction

Base Construction	Cast Iron
Headstock Construction	Cast Iron
Headstock Gears Construction	Flame Hardened Steel
Bed Construction	Induction Hardened Cast Iron
Body Construction	Cast Iron
Stand Construction	Cast Iron
Paint	Epoxy

Other

Kilowatt Output.....3.077

Other Specifications:

Country Of Origin .....China
Warranty ..... 1 Year
Serial Number Location ..... Front of Headstock
Assembly Time .....2 hours

Features:

Precision Gound and Hardened V-bed is Made of Meehanite Casting
Totally Enclosed Universal Gearbox Allows Cutting of Inch, Metric, Whitworth, Modular and Diametral Threads
Headstock Gears Runs in an Oil Bath and are Hardened and Precision Ground for Smooth, Quiet and Vibration
Dual Inch/Metric Dials
Halogen Light
Coolant System
Full Length Splash Guard
Steady Rest and Follow Rest have Roller Tips
Dual Coolant Nozzles for Chambering Barrels
Extra Long Tailstock for Support
Tailstock can be Tightened with a Torque Wrench for Precise Alignment of Centers
Four Brass Tipper Bolts for Supporting Gun Barrels

Accessories Included:

#4 to 6 Morse Taper Spindle Nose Sleeve
12" 4-Jaw Chuck
14" Face Plate
8" 3-Jaw Chuck
Center Sleeve
Centers
Follow Rest with Roller Tips
MT#4 Dead Center
Quick Change Tool Post
Service Tools
Steady Rest with Roller Tips
Toolbox

Identification

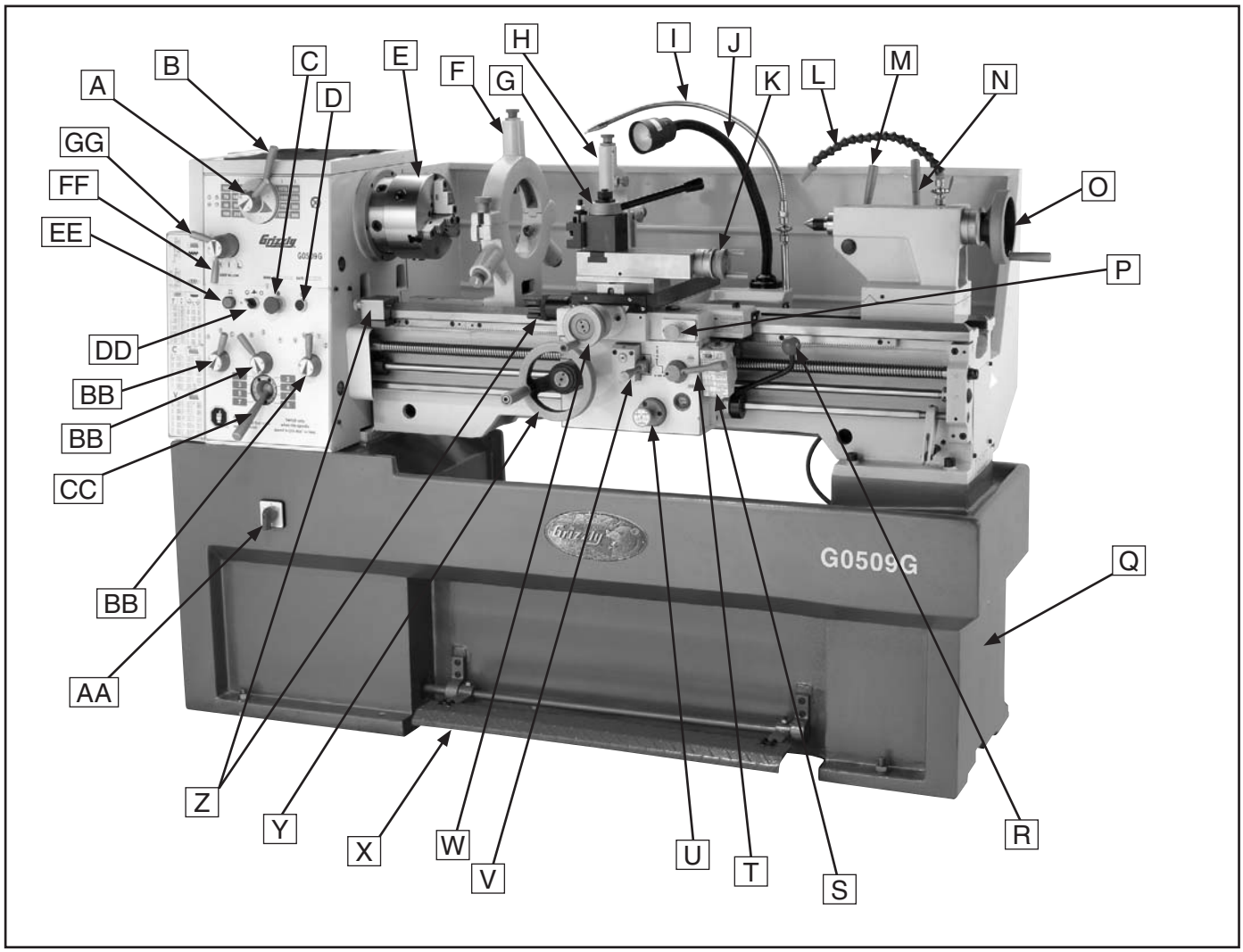


Figure 1. Model G0509G identification.

A. Headstock Low/High Range Lever
B. Headstock Speed Lever
C. Emergency Stop/RESET Button
D. Inching/Jog Button
E. 3-Jaw Chuck with 2-Piece Jaws
F. Steady Rest
G. Quick Change Tool Holder and Post
H. Follow Rest
I. Coolant Nozzle A
J. Halogen Work Lamp
K. Compound Rest Handwheel & Inch/Metric Sleeve
L. Coolant Nozzle B
M. Tailstock Barrel Lock Lever
N. Tailstock Lock Lever
O. Tailstock Handwheel
P. Apron Hand Pump
Q. Coolant Pump and Tank Access Panel
R. Spindle Rotation ON/OFF Lever
S. Threading Dial Assembly
T. Halfnut Lever
U. Apron Feed Direction Knob
V. Feed Selector Lever
W. Cross Slide Handwheel & Inch/Metric Sleeve
X. Foot Brake
Y. Apron Handwheel
Z. Manual Micrometer Stop
AA. Motor High/Low Range Switch
BB. Gearbox Ratio Levers
CC. Gearbox speed range lever
DD. Pump ON/OFF Switch
EE. Power ON Lamp
FF. Gearbox High/Low Range Lever
GG. Leadscrew/Feed Rod Direction Lever

SECTION 1: SAFETY

⚠WARNING

For Your Own Safety, Read Instruction Manual Before Operating this Machine

The purpose of safety symbols is to attract your attention to possible hazardous conditions. This manual uses a series of symbols and signal words intended to convey the level of importance of the safety messages. The progression of symbols is described below. Remember that safety messages by themselves do not eliminate danger and are not a substitute for proper accident prevention measures.

⚠DANGER **Indicates an imminently hazardous situation which, if not avoided, WILL result in death or serious injury.**

⚠WARNING **Indicates a potentially hazardous situation which, if not avoided, COULD result in death or serious injury.**

⚠CAUTION **Indicates a potentially hazardous situation which, if not avoided, MAY result in minor or moderate injury. It may also be used to alert against unsafe practices.**

NOTICE **This symbol is used to alert the user to useful information about proper operation of the machine.**

⚠WARNING

Safety Instructions for Machinery

1. **READ THE ENTIRE MANUAL BEFORE STARTING MACHINERY.** Machinery presents serious injury hazards to untrained users.

2. **ALWAYS USE ANSI APPROVED SAFETY GLASSES WHEN OPERATING MACHINERY.** Everyday eyeglasses only have impact resistant lenses—they are NOT safety glasses.

3. **ALWAYS WEAR A NIOSH APPROVED RESPIRATOR WHEN OPERATING MACHINERY THAT PRODUCES DUST.** Most types of dust (wood, metal, etc.) can cause severe respiratory illnesses.

4. **ALWAYS USE HEARING PROTECTION WHEN OPERATING MACHINERY.** Machinery noise can cause permanent hearing loss.

5. **WEAR PROPER APPAREL.** DO NOT wear loose clothing, gloves, neckties, rings, or jewelry that can catch in moving parts. Wear protective hair covering to contain long hair and wear non-slip footwear.

6. **NEVER OPERATE MACHINERY WHEN TIRED OR UNDER THE INFLUENCE OF DRUGS OR ALCOHOL.** Be mentally alert at all times when running machinery.

⚠WARNING
Safety Instructions for Machinery

7. **ONLY ALLOW TRAINED AND PROPERLY SUPERVISED PERSONNEL TO OPERATE MACHINERY.** Make sure operation instructions are safe and clearly understood.

8. **KEEP CHILDREN AND VISITORS AWAY.** Keep all children and visitors a safe distance from the work area.

9. **MAKE WORKSHOP CHILDPROOF.** Use padlocks, master switches, and remove start switch keys.

10. **NEVER LEAVE WHEN MACHINE IS RUNNING.** Turn power ***OFF*** and allow all moving parts to come to a complete stop before leaving machine unattended.

11. **DO NOT USE IN DANGEROUS ENVIRONMENTS.** DO NOT use machinery in damp, wet locations, or where any flammable or noxious fumes may exist.

12. **KEEP WORK AREA CLEAN AND WELL LIGHTED.** Clutter and dark shadows may cause accidents.

13. **USE A GROUNDED EXTENSION CORD RATED FOR THE MACHINE AMPERAGE.** Grounded cords minimize shock hazards. Undersized cords create excessive heat. Always replace damaged extension cords.

14. **ALWAYS DISCONNECT FROM POWER SOURCE BEFORE SERVICING MACHINERY**. Make sure switch is in OFF position before reconnecting.

15. **MAINTAIN MACHINERY WITH CARE.** Keep blades sharp and clean for best and safest performance. Follow instructions for lubricating and changing accessories.

16. **MAKE SURE GUARDS ARE IN PLACE AND WORK CORRECTLY BEFORE USING MACHINERY.**

17. **REMOVE ADJUSTING KEYS AND WRENCHES.** Make a habit of checking for keys and adjusting wrenches before turning machinery ***ON***.

18. **CHECK FOR DAMAGED PARTS BEFORE USING MACHINERY.** Check for binding or misaligned parts, broken parts, loose bolts, and any other conditions that may impair machine operation. Repair or replace damaged parts before operation.

19. **USE RECOMMENDED ACCESSORIES.** Refer to the instruction manual for recommended accessories. Improper accessories increase risk of injury.

20. **DO NOT FORCE MACHINERY.** Work at the speed for which the machine or accessory was designed.

21. **SECURE WORKPIECE.** Use clamps or a vise to hold the workpiece when practical. A secured workpiece protects your hands and frees both hands to operate the machine.

22. **DO NOT OVERREACH.** Maintain stability and balance at all times.

23. **MANY MACHINES CAN EJECT WORKPIECES TOWARD OPERATOR.** Know and avoid conditions that cause the workpiece to "kickback."

24. **ALWAYS LOCK MOBILE BASES (IF USED) BEFORE OPERATING MACHINERY**.

25. **CERTAIN DUST MAY BE HAZARDOUS** to the respiratory systems of people and animals, especially fine dust. Be aware of the type of dust you are exposed to and always wear a respirator designed to filter that type of dust.

⚠WARNING
Additional Safety Instructions for Lathes

1. **UNDERSTANDING THE MACHINE:** Read and understand this manual before operating machine.

2. **CLEANING MACHINE:** To avoid entanglement and lacerations, do not clear chips by hand. Use a brush, and never clear chips while the lathe is operating.

3. **USING CORRECT TOOLING:** Always select the right cutter for the job, and make sure cutters are sharp. The right tool decreases strain on the lathe components and reduces the risk of unsafe cutting.

4. **ELIMINATING PROJECTILE HAZARDS:** Always remove the chuck key, and never walk away from the lathe with the chuck key installed. Always make sure workpiece is securely held in chuck before starting lathe. A workpiece thrown from the chuck could cause severe injury.

5. **AVOIDING OVERLOADS:** Always use the appropriate feed and speed rates.

6. **PREVENTING A CUTTING TOOL/CHUCK CRASH:** Always release automatic feeds after completing a job, and never leave lathe unattended while it is running.

7. **AVOIDING STARTUP INJURIES:** Make sure workpiece, cutting tool, and tool post have adequate clearance before starting lathe. Check chuck clearance and saddle clearance before starting the lathe. Make sure spindle RPM is set correctly for part diameter before starting the lathe. Large parts can be ejected from the chuck if the chuck speed is set too high.

8. **CHUCK SAFETY:** Chucks are surprisingly heavy and awkward to hold, so protect your hands and the lathe ways. Always use a chuck cradle or piece of plywood over the lathe ways.

9. **WORKPIECE SUPPORT:** Support a long workpiece if it extends from the headstock so it will not wobble violently when the lathe is turned ***ON***. If workpiece extends more than 2.5 times its diameter from the chuck, support it by a center or steady rest, or it may deflect and fall out of the chuck while cutting.

10. **AVOIDING ENTANGLEMENT INJURIES:** Never attempt to slow or stop the lathe chuck or mill spindle by hand; and tie back long hair, ponytails, loose clothing, and sleeves so they do not dangle.

⚠WARNING

Like all machinery there is potential danger when operating this machine. Accidents are frequently caused by lack of familiarity or failure to pay attention. Use this machine with respect and caution to lessen the possibility of operator injury. If normal safety precautions are overlooked or ignored, serious personal injury may occur.

⚠CAUTION

No list of safety guidelines can be complete. Every shop environment is different. Always consider safety first, as it applies to your individual working conditions. Use this and other machinery with caution and respect. Failure to do so could result in serious personal injury, damage to equipment, or poor work results.

Glossary of Terms

The following is a list of common definitions, terms and phrases used throughout this manual as they relate to this lathe and metalworking in general. Become familiar with these terms for assembling, adjusting or operating this machine. Your safety is **VERY** important to us at Grizzly!

Arbor: A machine shaft that supports a cutting tool.

Backlash: Wear in a screw or gear mechanism that may result in slippage, vibration, and loss of tolerance.

Carriage: A main housing that consists of the apron and the saddle.

Cross Slide: A fixture attached to the lathe carriage that holds the compound rest and can be moved in and out.

Compound Rest: A fixture attached to the cross slide that holds the tool holder and can be moved in and out.

Cutting Speed: The distance that a point on a cutter moves in one minute, expressed in meters or feet per minute.

Dial Indicator: An instrument used in setup and inspection work that shows on a dial the amount of error in size or alignment of a part.

Facing: In lathe work, cutting across the end of a workpiece, usually to machine a flat surface.

Feed: The movement of a cutting tool into a workpiece.

Gib: A tapered wedge located along a sliding member to take up wear or to ensure a proper fit.

Headstock: The major lathe component that houses the spindle and motor drive system to turn the workpiece.

Lathe Center: A lathe accessory with a 60° point which is inserted into the headstock or tailstock of the lathe and is used to support the workpiece.

Leadscrew: The long screw that is driven by the end gears and supplies power to the carriage.

Saddle: The upper portion of carriage that rides on the lathe ways and supports the cross feed and the follow rest.

Spindle: The revolving shaft that holds and drives the workpiece.

Tailstock: A moveable fixture opposite of the headstock on a lathe that has a spindle used to support one end of a workpiece and for holding tools.

Tool Post: The part of the compound rest that holds the tool holder.

Turret: A machine fixture that holds multiple tools and can be revolved and indexed to position.

Ways: The precision machined and flat tracks on which the carriage and tailstock slide.

SECTION 2: CIRCUIT REQUIREMENTS

220V 3-Phase Operation

⚠WARNING

Serious personal injury could occur if you connect the machine to the power source before you have completed the set up process. DO NOT connect the machine to the power source until instructed to do so.

Full Load Amperage Draw w/Pump

G0509 Low-Sp: 3HP 220V 3-Ph ..... 11 Amps
High-Sp: 4HP 220V 3-Ph ..... 16 Amps

G0509G Low-Sp: 3.8HP 220V 3-Ph .... 9.5 Amps
High-Sp: 4.5HP 220V 3-Ph..... 18 Amps

Circuit Requirements

We recommend connecting your machine to a dedicated and grounded circuit that is rated for the amperage given below. Never replace a circuit breaker on an existing circuit with one of higher amperage without consulting a qualified electrician to ensure compliance with wiring codes. **If you are unsure about the wiring codes in your area or you plan to connect your machine to a shared circuit, consult a qualified electrician.**

Minimum Circuit.....30 Amp

220V Connection Type

For 220V 3-phase connection of this lathe, we recommend wiring your machine with a L15-30 plug and recepticle. A qualified electrician should determine the best cord to use in your environment.

G0509 & G0509G 220V 3-Phase L15-30

Grounding

In the event of an electrical short, grounding reduces the risk of electric shock. The grounding wire in the power cord must be properly connected to the grounding prong on the plug; likewise, the outlet must be properly installed and grounded. All electrical connections must be made in accordance with local codes and ordinances.

Extension Cords

We do not recommend the use of extension cords. Instead, arrange the placement of your equipment and the installed wiring to eliminate the need for extension cords.

⚠WARNING

Electrocution or fire could result if this machine is not grounded correctly or if your electrical configuration does not comply with local and state codes. Ensure compliance by checking with a qualified electrician!

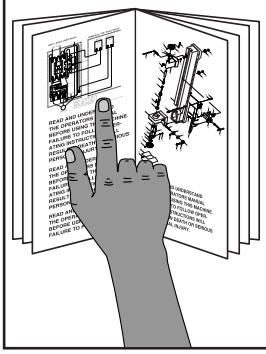
Phase Converter

If your lathe is connected to a phase converter for 3-phase power, the power from the manufactured power leg (sometimes called the wild wire or manufactured leg) can fluctuate.

Make sure that when you connect the lathe to the phase converter that you connect the "Wild Wire" or the "Manufactured Leg" from the phase converter to the lathe input lead **L2**. Otherwise, your lathe may not start properly, and magnetic switch chatter and transformer damage will occur. If swapping motor rotation direction, swap **L1** & **L3**, but do not touch **L2**.

SECTION 3: SETUP

Setup Safety

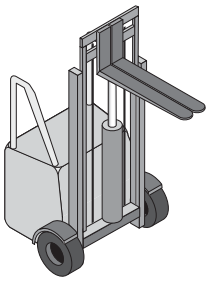


WARNING

This machine presents serious injury hazards to untrained users. Read through this entire manual to become familiar with the controls and operations before starting the machine!

WARNING

Wear safety glasses during the entire set up process!



WARNING

This machine and its components are very heavy. Use power lifting equipment such as a fork lift or hoist to move heavy items.

Items Needed for Setup

The following items are needed to complete the setup process, but are not included with your machine:

Description	Qty
• Fork Lift or Hoist (Rated 5000 lbs	1
• Lifting Straps (Rated 5000 lbs	1
• Lifting Hooks (Rated 5000 lbs	1
• Machinist's Level	1

Unpacking

Your machine was carefully packaged for safe transportation. Disassemble the crate and remove the packaging materials from around your machine to inspect it. If you discover the machine is damaged, *please immediately call Customer Service at (570) 546-9663 for advice.*

Save the containers and all packing materials for possible inspection by the carrier or its agent. *Otherwise, filing a freight claim can be difficult.*

When you are completely satisfied with the condition of your shipment, inventory the contents.

Inventory

After all the parts have been removed from the shipping crate, you should have the following items with your lathe.

Installed Components (Figure 2) **Qty.**

A. 8" Three-Jaw Chuck w/Jaws 1
B. Steady Rest 1
C. Quick Change Tool Post w/Tool Holder 1
D. Follow Rest 1

Loose Components (Figure 3)

E. 12" Four-Jaw Universal Chuck 1
F. 14" Faceplate 1
G. Little Red Tool Box 1
H. Tool Holder (1-Installed) 2
I. Wrench Set 6/7, 8/10, 9/11, 11/13, 12/14, 17/19, 22/24, and 27/30mm ..... 1 ea
J. Camlock T-Wrench 1
K. Tool Holder/Apron Lock T-Wrench 1
L. 4-Jaw Chuck T-Wrench 1
M. 3-Jaw Chuck T-Wrench 1
N. 4-Jaw Chuck Camlock Studs 6
O. Oil Bottle 1
P. MT#6 to MT#4 Spindle Sleeve Adapter 1
Q. Cast-Iron Feet 6
R. Jacking Studs W/Nuts 6
S. Hex Wrench Set 2, 2.5, 3, 4, 5, 6, 8, 10, and 12mm ..... 1 ea
T. Spider Screws 4
U. #2 Phillips Screwdriver 1
V. #2 Standard Screwdriver 1
W. Tailstock Lock Lever 1
X. Handwheel Handle Set ..... 1 ea
Y. Carbide Tip Dead Center MT#4 1
Z. Standard Tip Dead Center MT#4 1

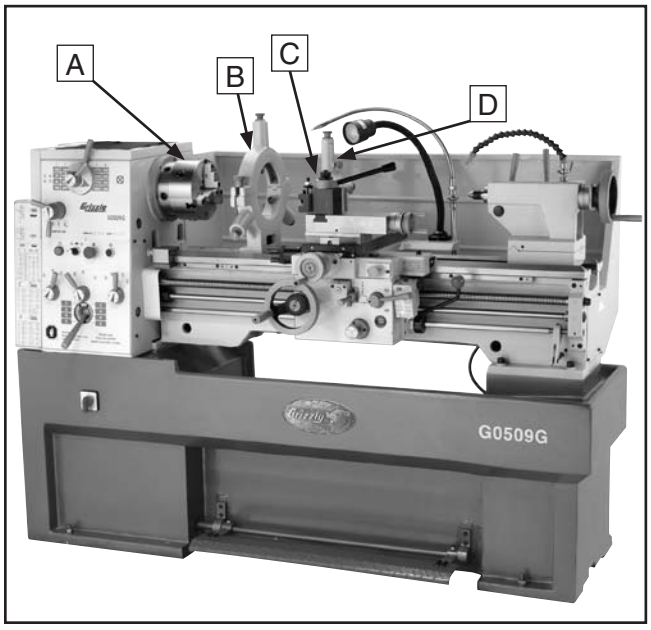


Figure 2. Installed components.

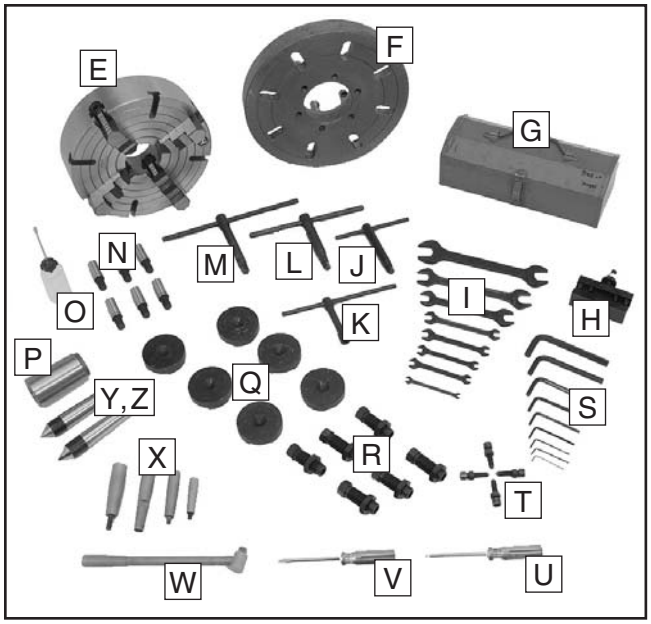


Figure 3. Packaged components.

NOTICE

Some hardware/fasteners on the inventory list may arrive pre-installed on the machine. Check these locations before assuming that any items from the inventory list are missing.

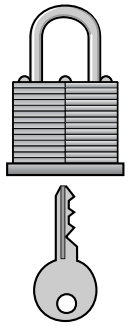
Site Considerations

Floor Load

Your lathe is a heavy load distributed in a small footprint. Place this machine on concrete floors only. The floor MUST be level, or the lathe frame and ways may distort over time.

Placement Location

Consider existing and anticipated needs, service panel access, length of material to be loaded into the lathe, and space for auxiliary stands, work tables or other machinery when establishing a location for your lathe (see **Figure 4** for minimum wall clearances).



⚠CAUTION

Children and visitors may be seriously injured if unsupervised. Lock all entrances to the shop when you are away. DO NOT allow unsupervised children or visitors in your shop at any time!

Clean Up

The unpainted surfaces are coated with a waxy oil to prevent corrosion during shipment. Remove this protective coating with a solvent cleaner or citrus-based degreaser such as Grizzly's G7895 Citrus Degreaser. To clean thoroughly, some parts must be removed.

⚠WARNING

Gasoline and petroleum products have low flash points and can explode or cause fire if used to clean machinery. DO NOT use these products to clean the machinery.

⚠CAUTION

Many cleaning solvents are toxic if inhaled. Minimize your risk by only using these products in a well ventilated area.

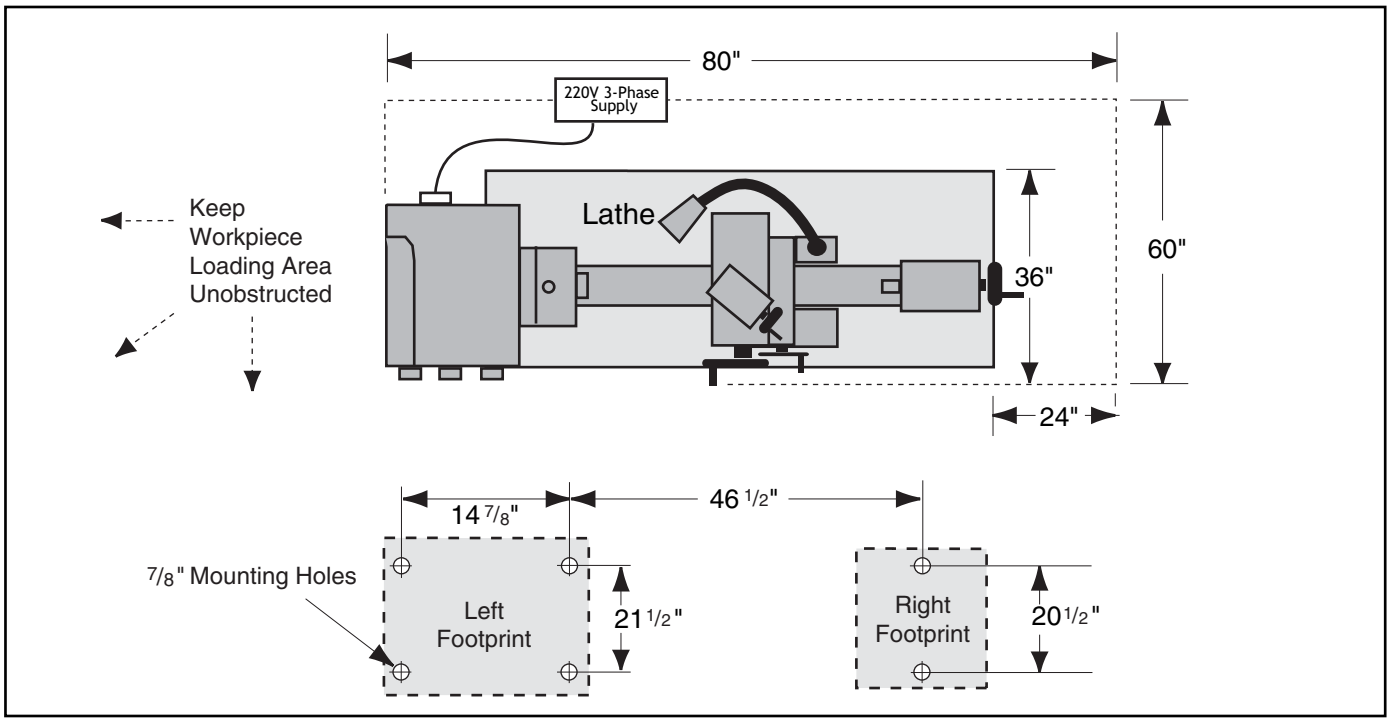
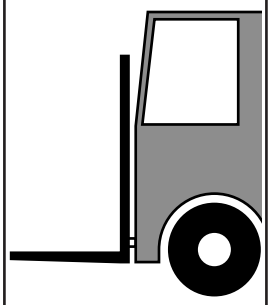


Figure 4. Machine clearances and bolt pattern.

Lifting & Moving the Lathe



⚠WARNING

This lathe is an extremely heavy machine. Serious personal injury or death may occur if safe lifting and moving methods are not followed. Seek assistance from a professional rigger if you are unsure about your abilities or maximum load ratings of your lifting equipment.

This lathe can be placed on the included leveling studs and cast-iron feet. If the lathe must be secured to the floor, refer to a professional machine installer for options. In either case, the lathe must be sitting flat at each mounting point, and the ways must be perfectly level. The bed cannot be twisted or bent. If a misalignment condition arises, shim the lathe where it mounts to the floor, or adjust the feet studs until the bed and ways are in alignment as shown by precision machinist's levels.

Make sure the slings or chains are routed so when the lathe is lifted and the chains or straps are tight, the control rod, lead screw, or feed rod are not bent. Remember, the headstock carries most of the weight of this machine (see **Figure 5**) for safe chain or strap routing and connection.

Figure 5. Lifting rod setup for the lathe.

Double check weight ratings and connections of the lifting system, cables, chains pins, and clevis links before lifting and moving the lathe to your prepared location. Do not attempt to lift or move this lathe if you are unsure about any aspect. Seek assistance from a professional rigger if required.

When lifting, you must move the carriage and tailstock to the right and lock into place as shown in **Figure 6** to provide counter-balance.

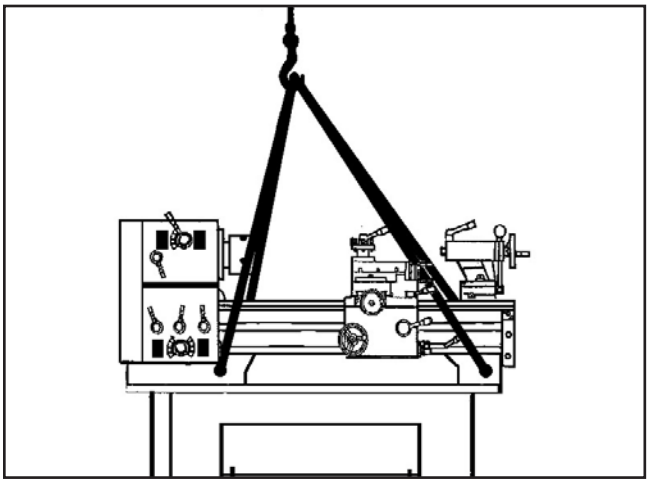


Figure 6. Lifting strap locations.

Mounting to Shop Floor

We recommend that the lathe is bolted to the floor. Because floor materials may vary, floor mounting hardware is not included. Since this is a precision machine, it is important to level the machine with a precision level when mounting.

Bolting to Concrete Floors

Lag shield anchors with lag bolts (**Figure 7**) and anchor studs (**Figure 8**) are two popular methods for anchoring an object to a concrete floor. We suggest you research the many options and methods for mounting your machine and choose the best that fits your specific application.

NOTICE

Anchor studs are stronger and more permanent alternatives to lag shield anchors; however, they will stick out of the floor, which may cause a tripping hazard if you decide to move your machine.

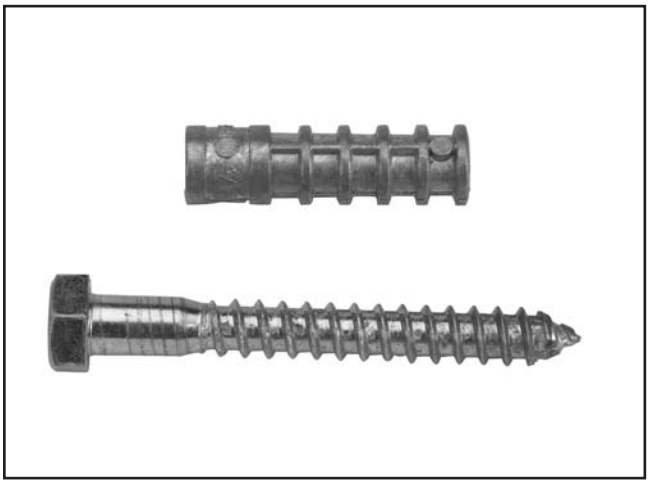


Figure 7. Typical lag shield anchor and lag bolt.

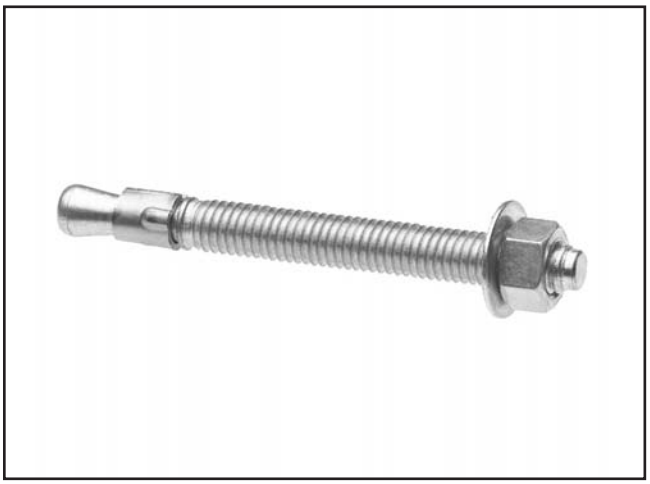


Figure 8. Typical anchor stud.

Test Run & Break-In

NOTICE

NEVER shift lathe gears when lathe is operating, and make sure both the half-nut lever and the feed lever are disengaged before you start the lathe! Otherwise the lathe will feed the apron into the chuck or tailstock, causing severe lathe damage.

The purpose of the test run is to make sure the lathe and its safety features operate correctly. If you encounter any problems, stop the lathe and refer to **Troubleshooting** on **Page 43** for corrections.

To begin the test run & break-in procedure:

1. Make sure the lathe is lubricated and the headstock oil level is full. Refer to **Lubrication** on **Page 41**.

2. Make sure the chuck is correctly secured to the spindle. Refer to **Mounting Chuck and Faceplate** on **Page 35** for details.

3. Disengage the feed and half-nut levers, and move the spindle ON/OFF lever to the neutral position, as shown in **Figure 9**.

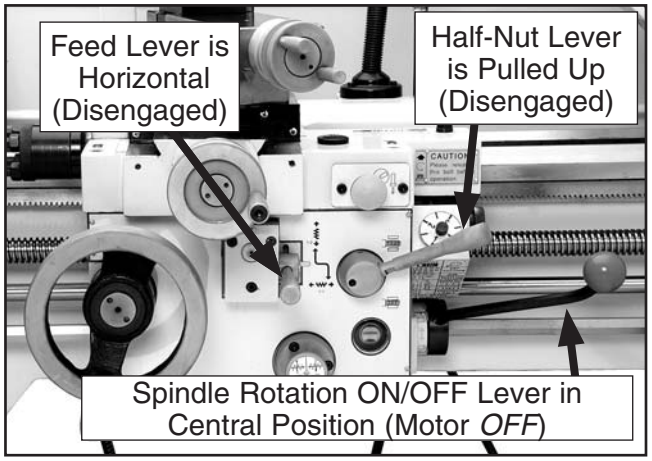

Feed Lever is Horizontal (Disengaged)
Half-Nut Lever is Pulled Up (Disengaged)
Spindle Rotation ON/OFF Lever in Central Position (Motor *OFF*)

Figure 9. Apron controls positioned for test run.

4. Rotate the red emergency stop button (**Figure 10**) clockwise so it pops out.

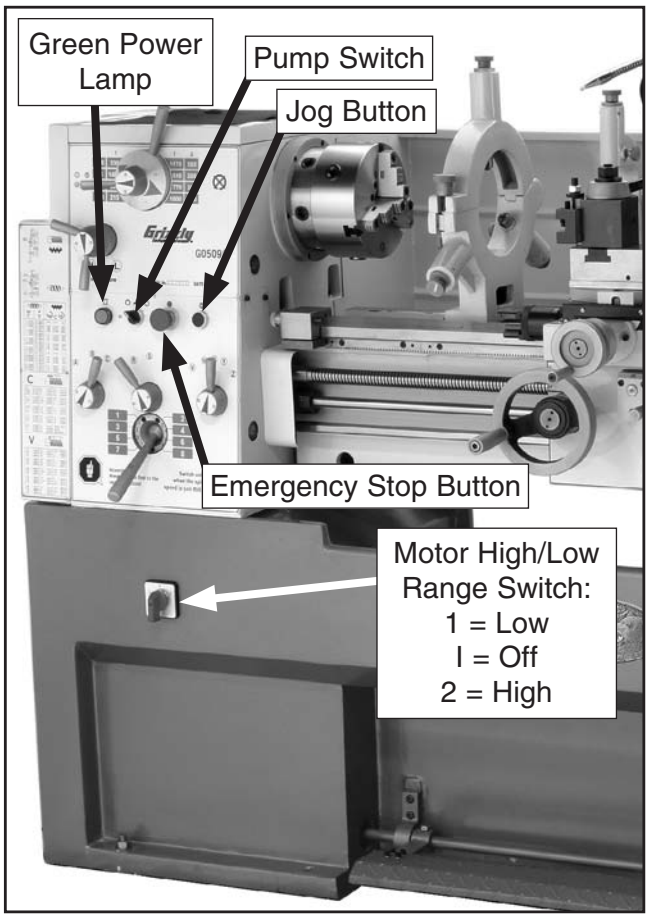


Figure 10. Motor High/Low range switch.

5. On the G0509G lathe, make sure the four spider bolts are either removed or they are tight in the spindle so they will not rattle out and contact the lathe end cover, causing damage when the lathe is running.

6. Make sure the pump switch is ***OFF***, and turn the motor high/low range switch (**Figure 10**) to "**1**" and the green power lamp will glow.

7. Put on safety glasses, tie back longhair, sleeves, and loose clothing.

8. Turn the work lamp ***ON*** and ***OFF.***

9. Point the coolant nozzles into the chip pan, turn the pump switch ***ON***, make sure coolant flows, and then turn the pump switch ***OFF***.

10. Push the jog button (**Figure 10**) a few times and the spindle motor will turn ***ON*** and the chuck will rotate.

11. Move the three headstock levers so they are positioned as shown in **Figure 11** so 330 RPM is selected.

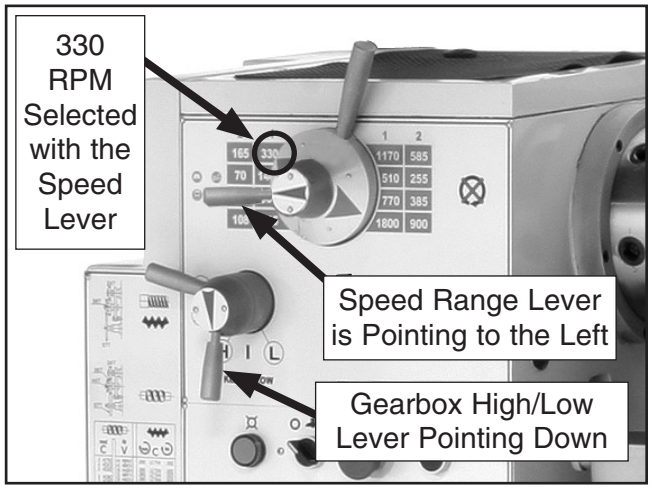


Figure 11. Headstock controls.

12. Move the spindle rotation ***ON/OFF*** lever (**Figure 9**) down until the chuck begins to turn. The top of the chuck should turn toward you.

—If the chuck is rotating away from you, then you must complete the **Changing Motor Rotation** procedure on **Page 22**, and repeat the entire **Test Run** procedure.

13. Push the emergency stop button.

—If the lathe does not stop, move the spindle rotation ***ON/OFF*** lever to the central position (***OFF***), and disconnect the lathe from power. Refer to **Troubleshooting** on **Page 43** for correction.

14. Return the spindle rotation ***ON/OFF*** lever to the central position (***OFF***), reset the emergency stop button, and restart the lathe.

15. Push the foot brake, and the lathe should come to a quick stop.

—If the lathe does not stop, push the emergency stop button, and disconnect the lathe from power. Refer to **Troubleshooting** on **Page 43** for correction.

16. Return the spindle rotation ***ON/OFF*** lever to STOP, restart the lathe, and let the lathe run for a minimum of 10 minutes at 330 RPM in both directions. DO NOT LEAVE THE LATHE RUNNING UNATTENDED!

17. After 10 minutes, stop the lathe, and move the headstock speed levers to select the next highest RPM. Run the lathe in both directions for 10 minutes.

18. Repeat for the remaining RPM ranges progressively increasing in RPM. When these steps are complete, the lathe is broken in.

19. Drain and refill the lubricant in the headstock with Mobil DTE® Oil or an equivalent. Refer to **Lubrication** on **Page 40** for the procedure and apron oil change interval.

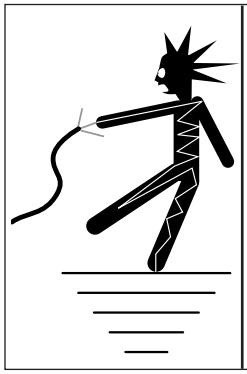
Changing Motor Rotation

If the chuck turns away from you at the top of the chuck when the spindle lever is in the down position, motor rotation must be reversed, by swapping the position of two of the three motor power supply wires.

To change the direction of the motor:

1. DISCONNECT LATHE FROM POWER!

2. Remove the main electrical box cover (**Figure 12**) at the rear of the lathe, and swap **L1** and **L3** input wires (**Figure 12**).



WARNING

Disconnect the lathe from power before working on wiring, and get help from an electrician if you are unsure about your wiring skills and codes. Electrocution or fire could result if this warning is ignored!

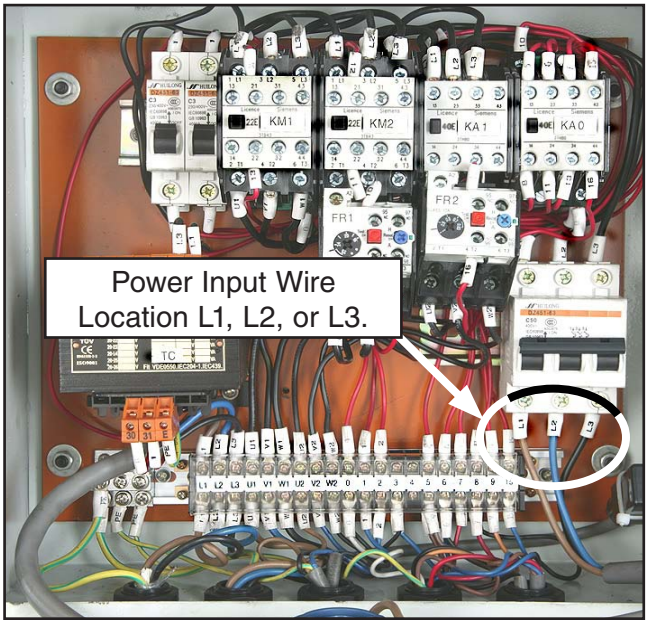


Figure 12. Motor power supply junction block.

Tailstock Setup

The tailstock alignment was set at the factory with the headstock. However, we recommend that you take the time to ensure that the tailstock is aligned to your own desired tolerances.

To align the tailstock:

1. Center drill a 6" long piece of bar stock on both ends. Set it aside for use in **Step 4.**

2. Make a dead center by turning a shoulder to make a shank. Flip the piece over in the chuck and turn a 60° point (**Figure 13**)**.** As long as it remains in the chuck, the point of your center will be accurate to the spindle axis.

   Note: *Keep in mind that the point will have to be refinished whenever it is removed and returned to the chuck.*

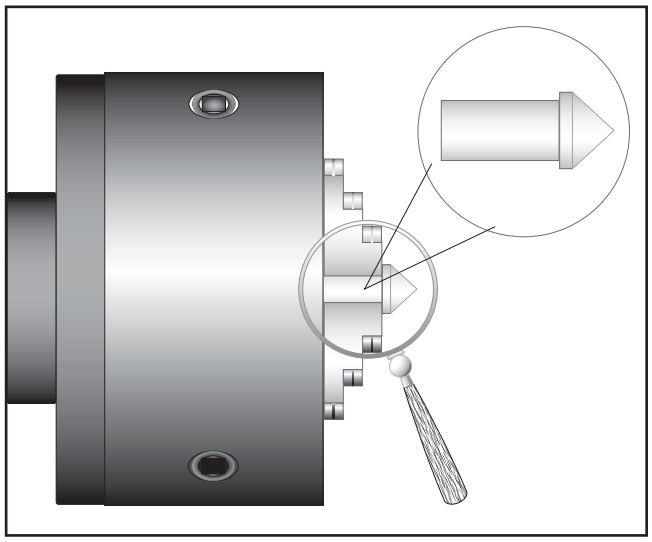


Figure 13. Finished dead center.

3. Place the dead center in your tailstock.

4. Attach a lathe dog to the bar stock from **Step 1** and mount it between the centers (as shown in **Figure 14**).

Figure 14. Bar stock mounted on centers.

5. Turn approximately 0.010" off the diameter.

6. Mount a dial indicator so that the plunger is on the tailstock barrel (**Figure 15**).

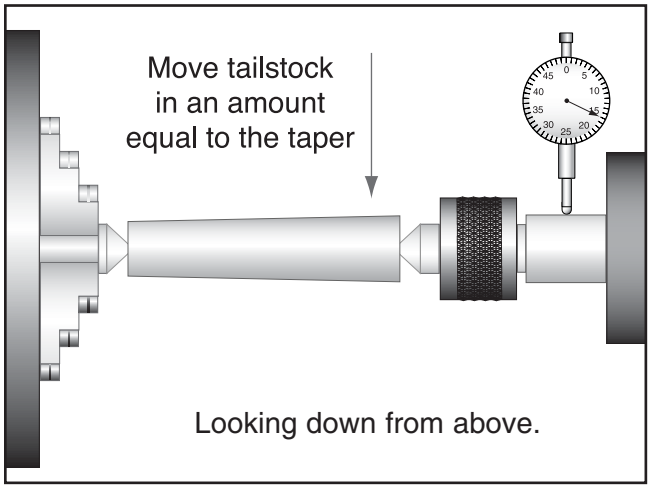


Figure 15. Adjusting for headstock end taper.

7. Measure the stock with a micrometer. If the stock is wider at the tailstock end, the tailstock needs to be moved toward the cutter the amount of the taper (**Figure 15**).

— If the stock is thinner at the tailstock end, the tailstock needs to be moved away from the operator by at least the amount of the taper (**Figure 16**).

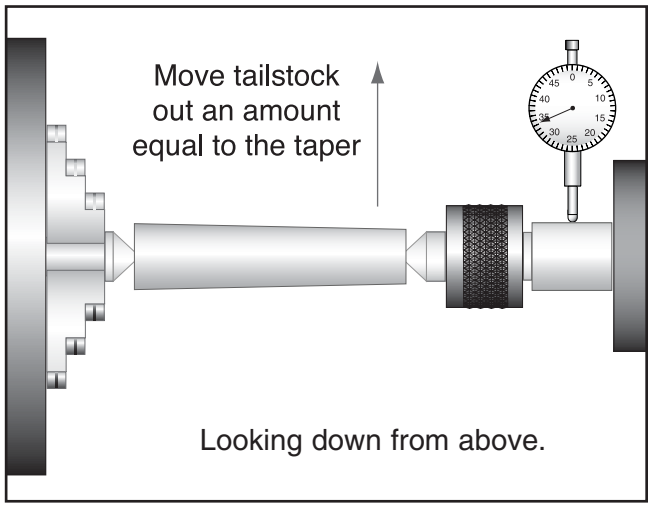


Figure 16. Adjusting for tailstock end taper.

NOTICE

DO NOT forget to lock the tailstock to the ways after each adjustment.

8. Loosen the tailstock lock lever and adjust the tailstock offset by the amount of the taper by turning the adjustment set screw (**Figure 17**). Turn another 0.010" off of the stock and check for taper. Repeat as necessary until the desired amount of accuracy is achieved.

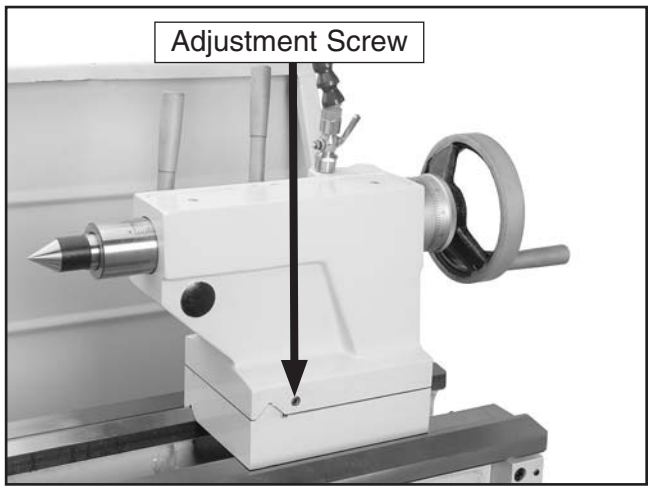


Figure 17. Tailstock adjustment locations.

Gap Removal

Your lathe has a gap section below the spindle that can be removed for turning large diameter parts. This gap was installed, then ground at the factory during lathe assembly for precise fit and alignment. Factors during original lathe assembly apply additional forces to the gap; therefore, replacing the gap to the original position will be very difficult. **We don't recommend removing the gap. If removed for turning large diameter parts, reinstallation to exact factory alignment is nearly impossible. The only option is to then leave the gap out and lose carriage travel near the chuck.**

To remove the gap:

1. Remove the four cap screws from the bottom of the gap and two from the ends of the ways (see **Figure 18**).

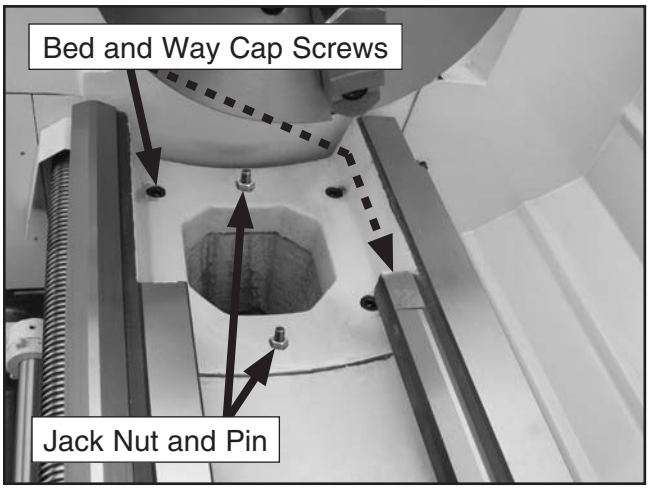


Figure 18. Lathe gap and pin arrangement.

2. Using a 14mm wrench, tighten the jack nuts to draw the pins up and out of the gap piece. **Figure 18**.

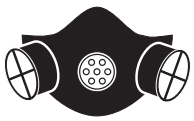
3. Tap the outside of the gap with a dead blow hammer to loosen, and remove the gap section.

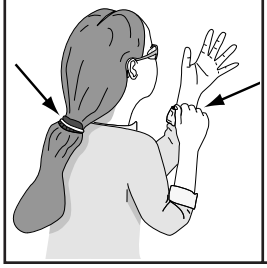
SECTION 4: OPERATION

Operation Safety

⚠WARNING

Damage to your eyes, lungs, and ears could result from using this machine without proper protective gear. Always wear safety glasses, a respirator, and hearing protection when operating this machine.





⚠WARNING

Loose hair and clothing could get caught in machinery and cause serious personal injury. Keep loose clothing and long hair away from moving machinery.

NOTICE

If you have never used this type of machine or equipment before, WE STRONGLY RECOMMEND that you read books, trade magazines, or get formal training before beginning any projects. Regardless of the content in this section, Grizzly Industrial will not be held liable for accidents caused by lack of training.

NOTICE

NEVER move levers while the lathe is running, and NEVER force any lever when shifting.

NOTICE

Complete the Test Run & Break-In procedure on Page 20 before using this lathe for any cutting or threading operations; otherwise, gear box damage will occur.

Spindle Speeds

The spindle speed or RPM is controlled by two speed control levers at the top of the headstock and the 2-speed motor switch located on the lathe base (**Figure 19**). The 2-speed motor allows for the low and high range speed options presented in columns **1** and **2** shown in **Figure 19**. Below is an example how to set the spindle to 1800 RPM.

See Figure 19 for the following example:

1. Move the 2-speed motor switch so it points to position **1**.

Note: *Position **"1"** on the switch activates both **#1** columns on the speed chart.*

*Position **"2"** activates both **#2** columns on the speed chart.*

*Position **"I",** the central position on the switch, cuts power to the motor.*

2. Move the spindle orange/blue range lever so it points to the right-hand orange-low range column number **1**.

Note: *The spindle orange/blue range lever must point to which ever range column your RPM is listed in.*

3. Move the spindle speed lever so the indicator points to 1800 at the bottom of the orange column number **1**.

Note: *The* spindle *speed lever must point to one of four speeds within the column in question.*

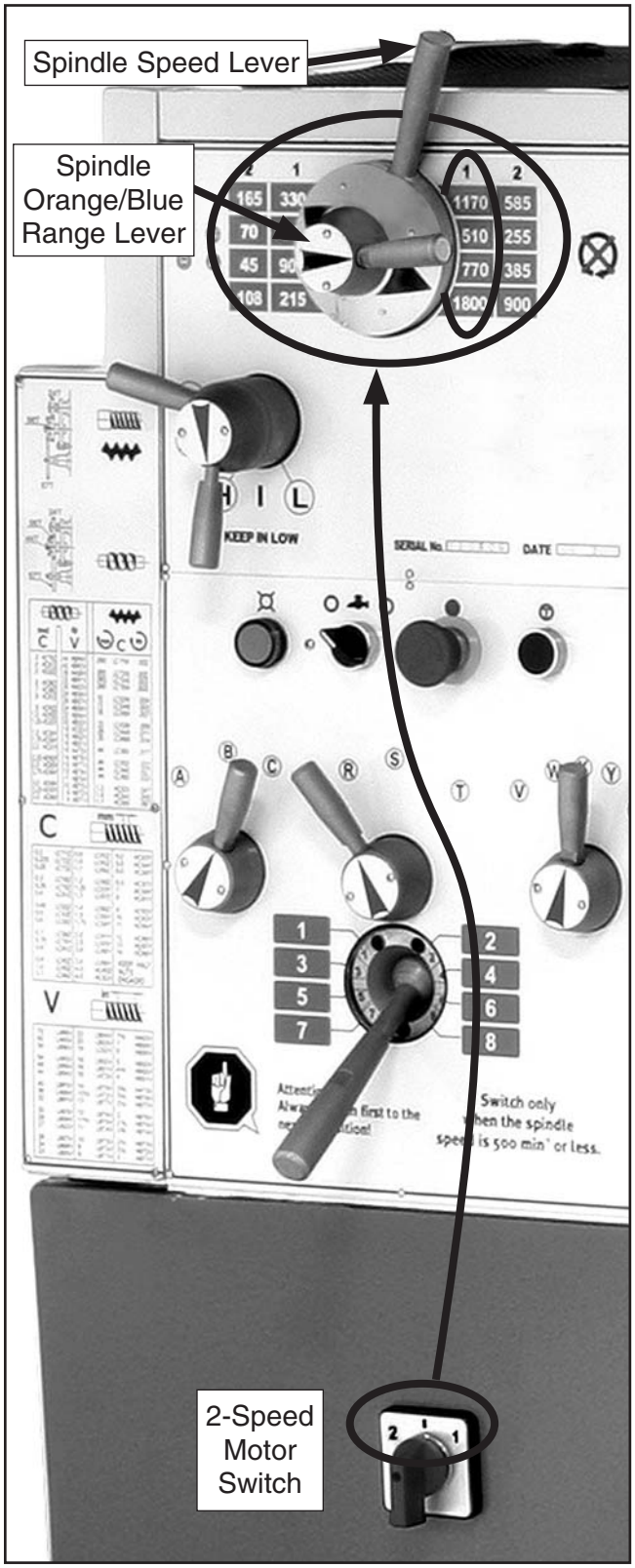


Figure 19. Spindle speed control.

Gearbox Speed Range lever

NOTICE

ONLY shift the gearbox levers when spindle speed is less than 500 RPM and the gearbox speed range lever is in neutral. NEVER force a lever. If the lever will not engage, use the jog button when applicable so the teeth mesh and the lever drops into position.

The gearbox has a series of levers used for controlling the feed rod and leadscrew feed rates in relationship with the spindle speed. Based on the threading and feed rate chart, you can shift the gearbox to accommodate an elaborate array of feed rates.

Depending on the spindle orange/blue range lever position, the gearbox speed range lever (**Figure 20**) has eight available positions for various threading and power feed operations.

—When the spindle orange/blue range lever (**Figure 20**) is pointing to the blue-spindle speed chart, the left-hand selections **1**, **3**, **5**, **7** are available.

—When the spindle orange/blue range lever (**Figure 20**) is pointing to the orange-spindle speed chart, the right-hand selections **2**, **4**, **6**, **8** are available.

Example:
In **Figure 20**, the spindle orange/blue range lever is pointing to the orange-spindle speed chart, and position "**8**" is selected from the available **2**, **4**, **6**, **8** positions.

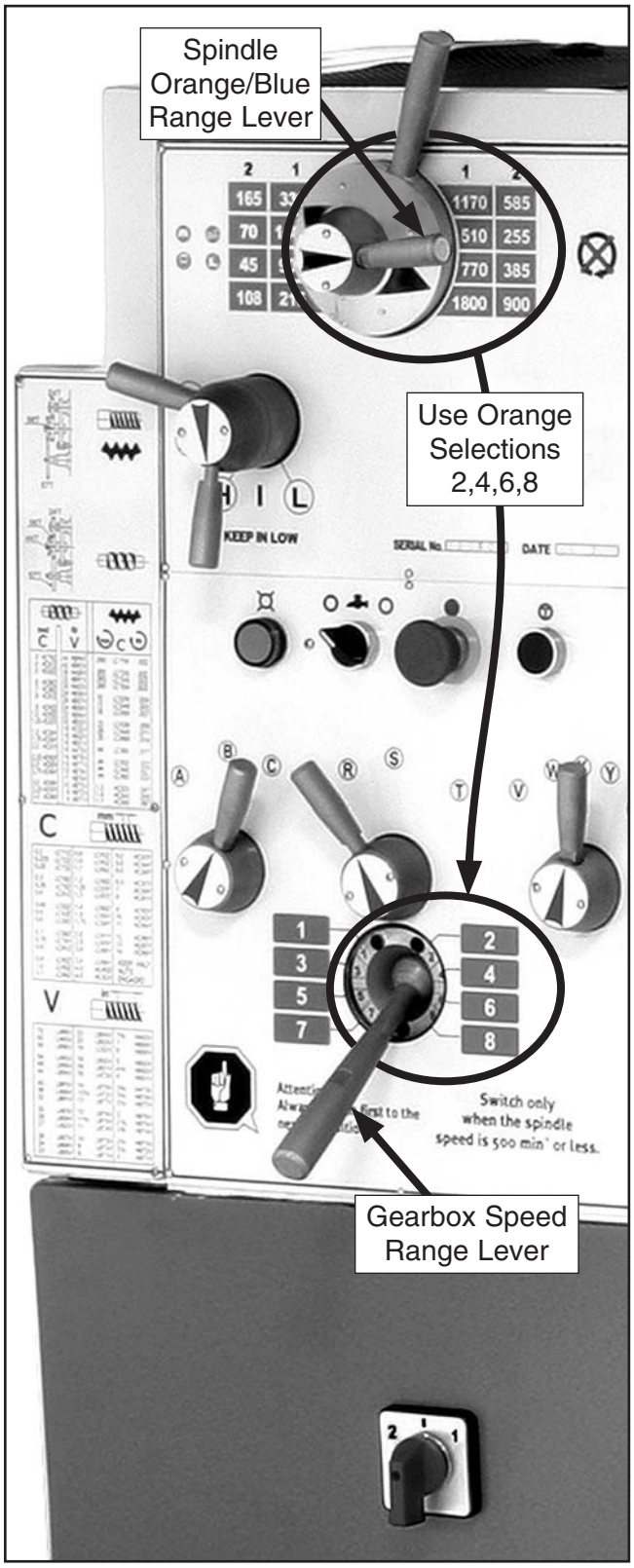

Spindle Orange/Blue Range Lever
Use Orange Selections 2,4,6,8
Gearbox Speed Range Lever
KEEP IN LOW
Switch only when the spindle speed is 500 min⁻¹ or less.

Figure 20. Gearbox controls.

Feed Rod and Leadscrew

NOTICE

ONLY shift the gearbox levers when spindle speed is less than 500 RPM and the gearbox speed range lever is in neutral. NEVER force a lever. If the lever will not engage, use the jog button when applicable so the teeth mesh and the lever drops into position.

The leadscrew/feed rod lever (**Figure 21**) engages and disengages the leadscrew and feed rod simultaneously. When the lever is moved up or down, the rotation of the leadscrew and feed rods are simultaneously reversed.

The three-position gearbox high/low range lever (**Figure 21**) will put the gearbox into high range "**H**", low range "**L**", or neutral "**I**".

Note: *Make sure to loosen the carriage lock (**Figure 28**) when apron power feed or threading are to be used. The carriage lock is used only to increase carriage stability when facing operations are in process.*

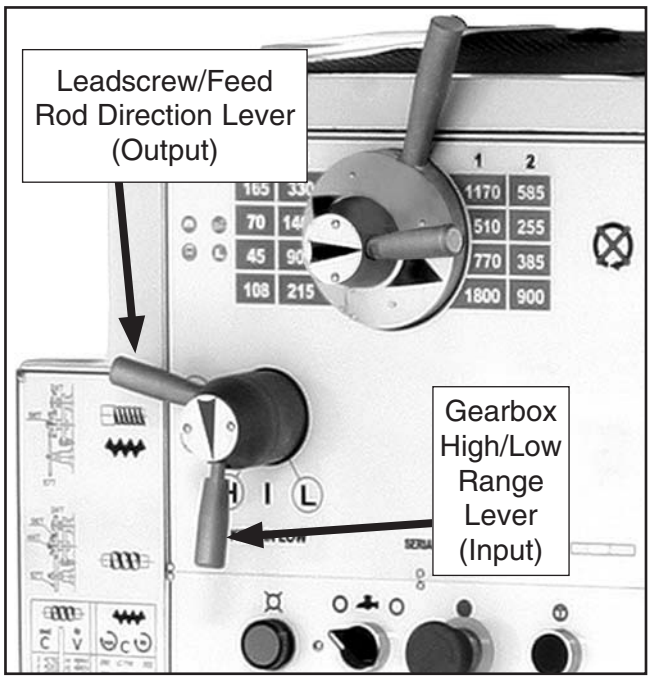


Figure 21. Gearbox input and output controls.

Gearbox Ratio Levers

NOTICE

ONLY shift the gearbox levers when spindle speed is less than 500 RPM and the gearbox speed range lever is in neutral. NEVER force a lever. If the lever will not engage, use the jog button when applicable so the teeth mesh and the lever drops into position.

The gearbox has a series of levers used for controlling the feed rod and leadscrew feed rates in relationship with the spindle speed.

Based on the threading and feed rate chart, you can shift the gearbox to accommodate an elaborate array of feed rates. The three gearbox range levers (**Figure 22**) have multiple lettered positions (**Figure 24**), and when moved according to the threading chart and example on the next page, you can quickly change the feed rate. The example on the next page shows the lathe setup to cut a **"3.5mm"** thread using the "**LCR8Y**" lever combination.

Note: *The change gear must be in the position shown in **Figure 23**.*

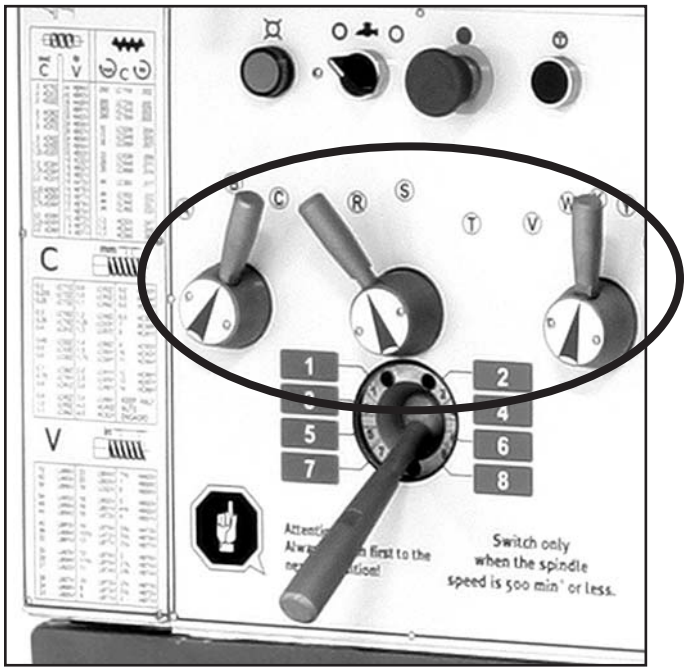
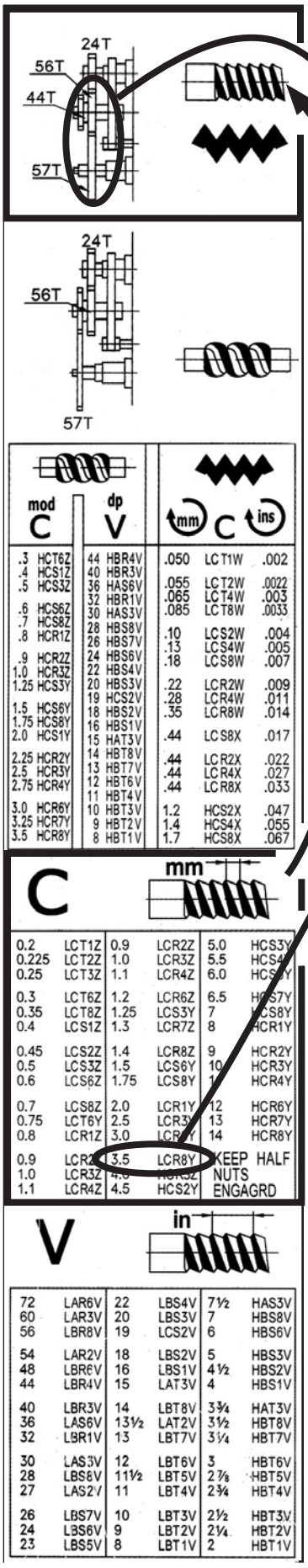


Figure 22. Gearbox range levers.



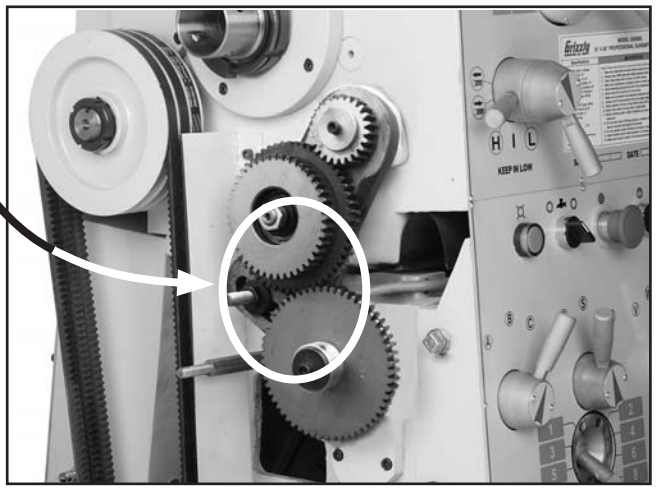


Figure 23. Change gear location.

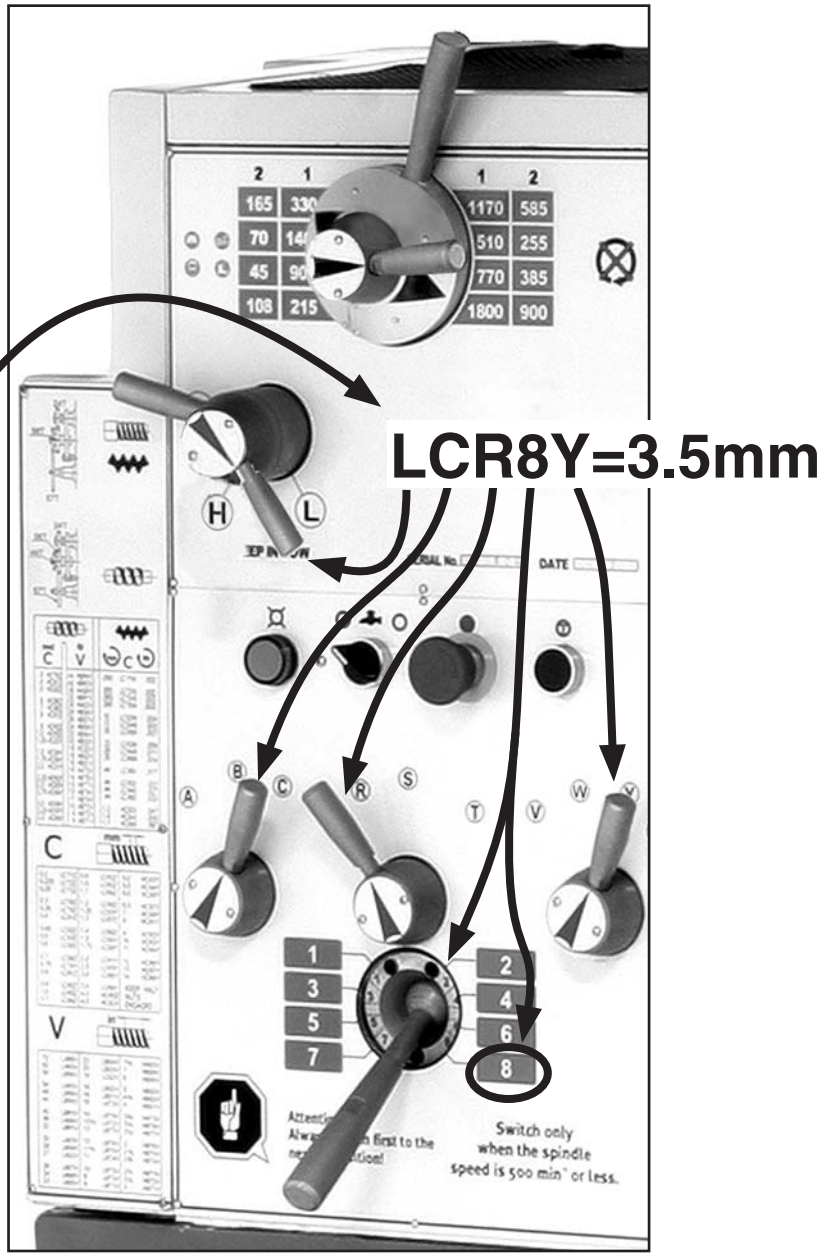


Figure 24. General usage.

Manual Feed Handwheels

Carriage Handwheel

The carriage handwheel (**Figure 25**) moves the carriage left or right along the bed. Remember the carriage lock must be loosened to allow for carriage movement during manual and power fed operations.

Compound Slide Handwheel

The compound slide handwheel can adjust the cross slide at any angle. Angle adjustment is locked by two cap screws on the base of the top slide. The graduated dial can be rotated to read metric or inch conventions by turning it 180° degrees by holding the handwheel with one hand and turning the dial hub with the other.

Cross Slide Handwheel

The cross slide handwheel moves the cross slide toward and away from the work. Turning the dial clockwise moves the slide toward the workpiece. The graduated dial can be rotated to read metric or inch conventions by turning it 180° degrees by holding the handwheel with one hand and turning the dial hub with the other.

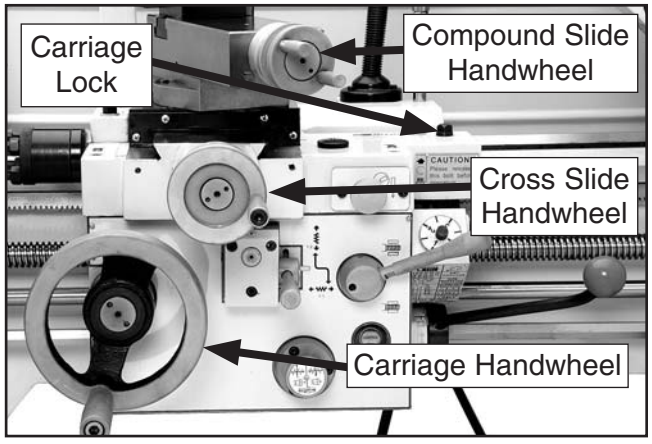


Figure 25. Handwheel locations.

Power Feed Direction Knob

Your lathe can cut left or right while feeding or in and out when facing. The feed direction is controlled by the feed direction knob shown in **Figure 26**.

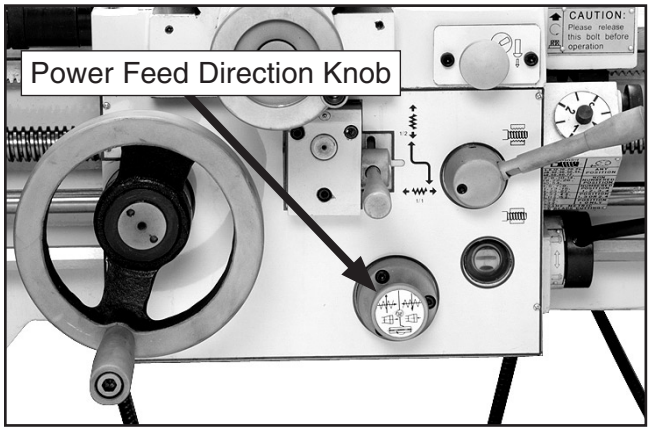


Figure 26. Feed direction knob.

Tool Post & Holder

Cutting tools can be secured and removed by tightening or loosening the clamping screws in the top of the tool holder (**Figure 27**). A threaded stud is mounted in the top of the holder and has a knurled thumb wheel. Rotating the thumb wheel raises or lowers the tool holder so the cutting tool can be indexed on the workpiece. The handle on the tool post is rotated to lock and unlock the tool holder, which rests in the dovetail ways. The tool post may be rotated by loosening the nut at the top of the tool post.

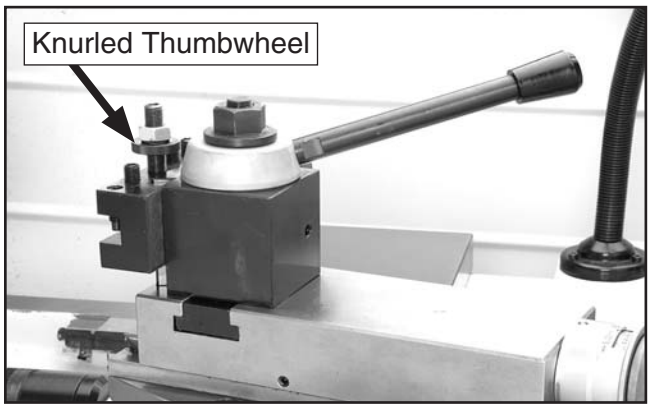


Figure 27. Quick change tool post.

Half-Nut Lever and Thread Dial

The half-nut lever (**Figure 28**) clamps and releases the half-nut, which clamps around the leadscrew. The lever is only engaged while cutting threads and is not designed for general power feeding operations. For general purpose feeding, use the feed lever (**Figure 28**). This lathe uses inch lead screws, and the thread dial chart shown in **Figure 29** is only used for inch threading. For all other threading operations, the half nut lever must stay engaged until the threads are complete.

Note: *If the apron feed lever (**Figure 28**), is engaged, the halfnut lever is blocked from use; and when the half-nut lever is engaged, the apron feed lever is blocked from use. If both levers are engaged at the same time, apron damage will occur.*

When the thumb knob (**Figure 28**) is loosened, the thread dial housing pivots so its gear can be engaged or disengaged from the lead screw. When engaged, the dial turns with the lead screw and spindle.

Note: *Always loosen the carriage lock (**Figure 28**) when threading or using the apron power feed. The carriage lock is used only to increase carriage stability during facing operations.*

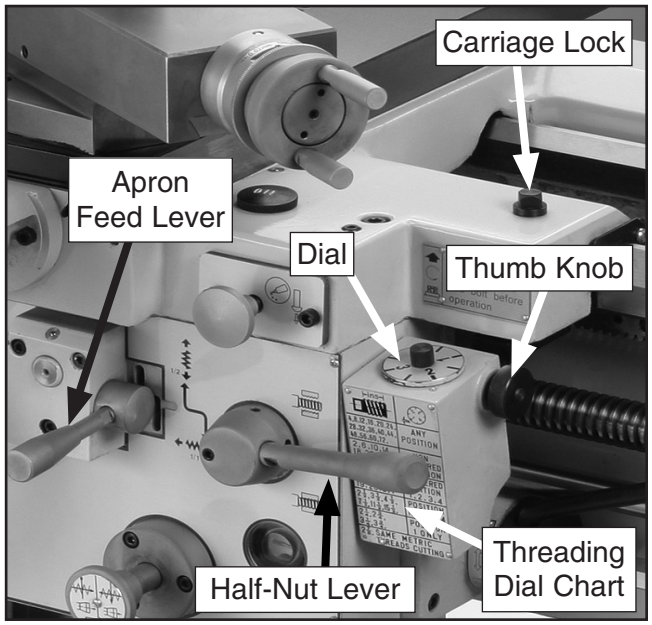


Figure 28. Threading dial and half-nut lever.

This column indicates when you can use the thread dial based on which thread TPI is being cut.

This column indicates which position on the thread dial you must reengage the halfnut.

ins	
4,8,12,16,20.24, 28,32,36,40,44, 48,56,60,72,	ANY POSITION
2,6,10,14, 18,22,26, 30,54,	NON NUMBERED POSITION
3,5,7,9, 11,13,15, 19,23,27,	NUMBERED POSITION 1,2,3,4
$2\frac{1}{2}, 3\frac{1}{2}, 4\frac{1}{2}$, $7\frac{1}{2}, 11\frac{1}{2}, 15\frac{1}{2}$,	POSITION 1,3 OR 2.4
$2\frac{1}{4}, 2\frac{3}{4}$, $3\frac{1}{4}, 3\frac{3}{4}$,	POSITION 1 ONLY
$2\frac{7}{8}$, SAME METRIC THREADS CUTTING	

Figure 29. Threading dial chart.

Steady Rest

The steady rest supports long, small diameter stock that otherwise could not be turned because of deflection, and can be used instead of the tailstock when facing the end of a long workpiece.

On the G0509G, the brass wear pads at the ends of the fingers have been replaced with bearings. Having bearings here maintains consistent non-wearing support throughout the cut.

To use the steady rest:

1. Secure the steady rest to the bedway from below with the locking plate, then snug the mounting bolt (**Figure 30**).

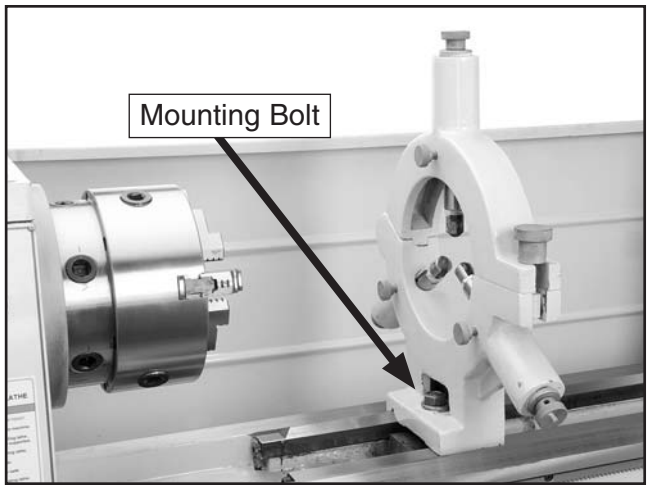


Figure 30. Steady rest in place.

2. Adjust the fingers until the bearings make contact and support the workpiece. Do not over tighten the fingers against the workpiece or you will cause workpiece deflection.

3. Oil the finger bearings and the rolling surfaces while in use to create non-marring workpiece support and to reduce finger wear.

Follow Rest

The follow rest is normally used with small diameter stock to prevent the workpiece from "springing" under pressure from the turning tool.

On the G0509G, the brass wear pads at the ends of the fingers have been replaced with bearings. Having bearings here maintains consistent non-wearing support throughout the cut. The steady rest can also replace the tailstock to allow for cutting tool access at the end of your workpiece.

To use the follow rest:

1. Secure the follow rest to the saddle with the two cap screws (**Figure 31**).

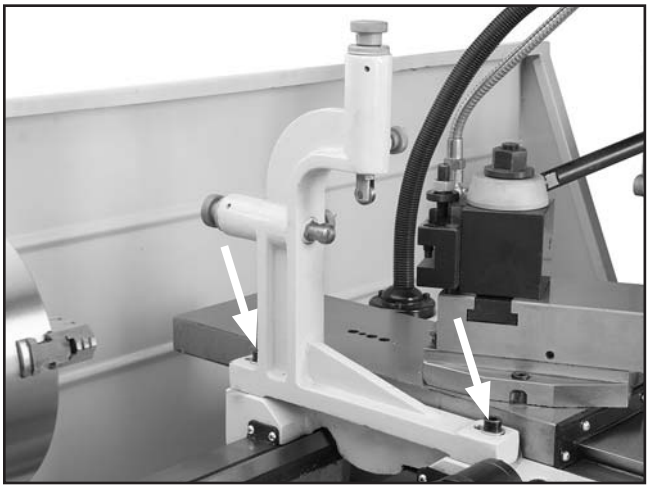


Figure 31. Follow rest secured to saddle.

2. Adjust the fingers until the bearings make contact and support the workpiece. Do not over tighten the fingers against the workpiece or you will cause workpiece deflection.

3. Oil the finger bearings and the rolling surfaces while in use to create non-marring workpiece support and to reduce finger wear.

Tailstock Controls

The tailstock (**Figure 32**) serves many functions. The primary use is holding centers and drill chucks. The barrel has an MT#4 (morse taper #4) bore and is imprinted with graduations in millimeters and inches.

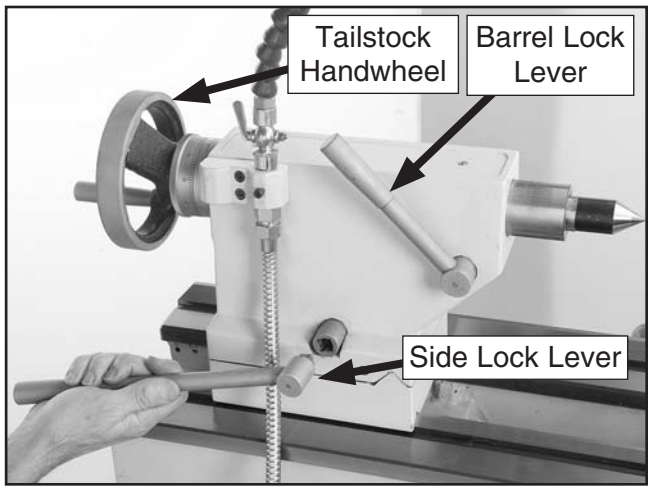


Figure 32. Tailstock controls.

Tailstock Handwheel

Turning the handwheel advances or retracts the barrel in the tailstock. The graduated dial on the handwheel is adjustable.

Barrel Lock Lever

This lever locks the tailstock barrel in place.

Side Lock Lever & Torque Tightening (G0509G)

This removable lever locks the tailstock in place on the lathe bed. The socket that it fits into will accept a ½-inch drive torque wrench.

To repeat very accurate vertical alignment positioning, tighten the tailstock here with an inch-pound torque wrench. If you must, you can use a foot-pound torque wrench but DO NOT exceed 40 lbs/ft of torque or you may damage the ways and the tailstock. When tightening the tailstock down to the maximum torque of 40 lbs/ft, the center point will be drawn down approximately 0.006" from the normal centerline when the tailstock is resting free on the ways.

Centers

A tailstock center supports stock that is too long to be supported by the chuck alone. The tailstock barrel and dead center have an MT#4 taper. Included with this lathe is an MT#4 to MT#6 spindle adapter sleeve. If you need to install a center in the spindle when using the face plate, you can do so by using this adapter sleeve.

Before installing a center or arbor, make sure that the mating surfaces are perfectly clean. These parts will last longer and remain accurate if properly maintained. If oil is present on the mating surfaces, the tapers will not interlock.

To install the center, insert the end of it into the tailstock bore until it seats. Once the workpiece is installed, the force of a mounted workpiece will fully seat the taper.

When using a dead center (**Figure 33**), the tailstock barrel should protrude about ½" and not more than 2¾" as indicated by the scale on the barrel.

To remove the dead center, back the tailstock barrel all the way into the tailstock casting. The dead center will pop out. Be sure to catch it when it comes out to avoid damaging the tip.

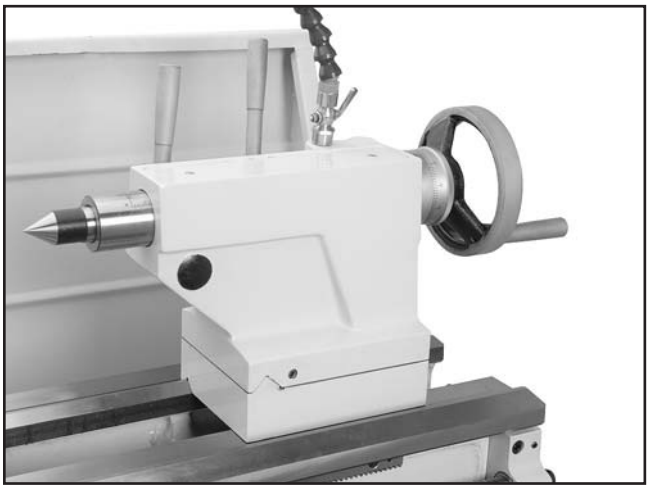


Figure 33. Dead center installed in tailstock.

Spider (G0509G)

Your lathe is equipped with a set of outboard spindle supports otherwise known as a "spider" (**Figure 34**). Use the spider when a long workpiece has the potential for wobble or vibration when it extends through the outboard side of the headstock.

The tips of the spider screws have brass wear pads that hold the workpiece without causing indents in the finish.

When installed, always use the jam nuts to lock each spider screw in position. Merely tightening the spider screws against the workpiece and leaving the jam nuts loose is not safe. The spiders screws may loosen up during lathe operation and crash into the lathe end cover.

⚠CAUTION

Remove the spider screws when not in use. Always disconnect the lathe from power when installing, removing, or adjusting the spider screws. Ignoring this warning can lead to personal injury or machine damage.

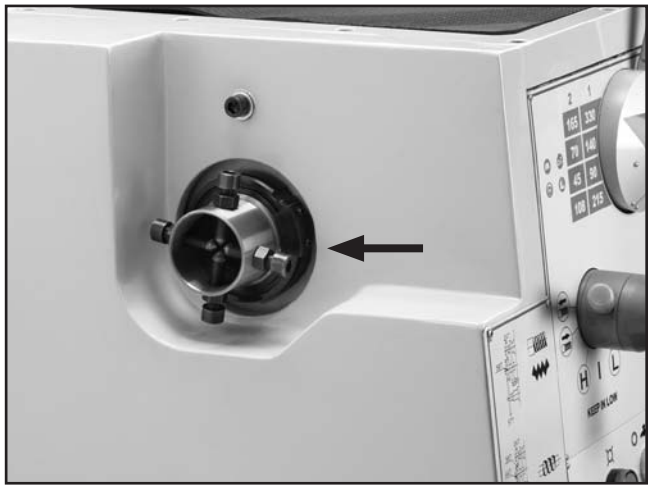


Figure 34. Spider.

Manual Micrometer Stop

This lathe is equipped with a manual micrometer stop (**Figure 35**). Toward the end of the cut and as the tool approaches the shoulder of a workpiece, disengage the carriage and then manually finish the cut by hand-operating the carriage.

The micrometer stop is not an automatic carriage stop. If used as such the carriage will crash into the chuck, causing damage and possibly destroying the lathe.

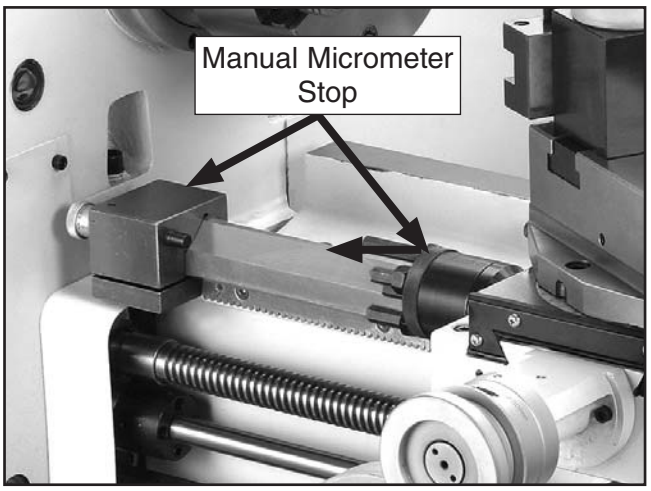


Figure 35. Manual micrometer stop.

Chuck & Faceplate Mounting

This lathe is shipped with the 3-jaw chuck installed. This is a scroll-type chuck, meaning that all three jaws move in unison when adjusted.

The 4-jaw chuck, on the other hand, features independent jaws. This chuck is used for square or unevenly-shaped stock.

If either chuck cannot hold your workpiece, the cast-iron faceplate has slots for T-bolts that hold standard or custom clamping hardware. With the correct clamping hardware, this faceplate will hold non-cylindrical parts such as castings.

The chucks and faceplate have a D-6 Camlock mount. Please note that there are lines stamped into the cam and on the chuck body. A chuck key is used to turn the locking cams (**Figure 37**) to secure/unsecure the chuck/faceplate.

⚠WARNING

The chuck is heavy and is awkward to handle. Always protect the ways when removing or installing a chuck, and make sure that you make a support cradle (Figure 36). Use this cradle when installing or removing chucks. Ignoring this warning may lead to a severe crushing or amputation injury!

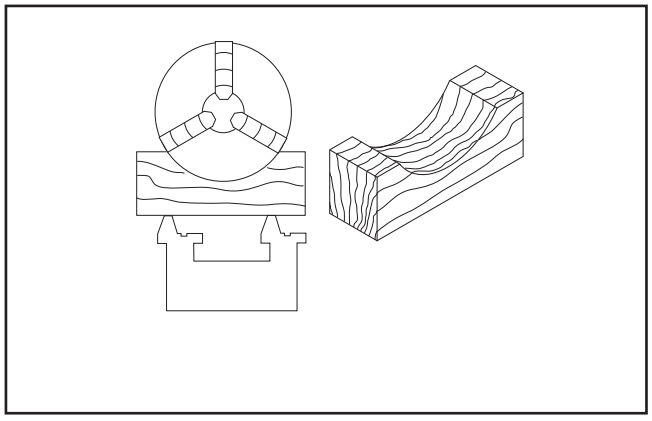


Figure 36. Wooden chuck support cradle.

To remove a chuck or faceplate:

1. DISCONNECT LATHE FROM POWER!

2. Place a piece of plywood across the lathe ways and position it just under the chuck so the ways are protected.

3. Turn a cam with the chuck key until the cam lock mark aligns with the cam release datum line shown in **Figure 37.**

Figure 37. Cam and lock marks.

4. Unlock the other cams in the same manner. Make sure to support the chuck as you align the last cam. The chuck may come off at this point, so **it is important that the weight is supported by an adequate chuck cradle.**

5. Remove the chuck key.

   —If the chuck is still tight on the spindle, tap the back of the chuck with a rubber or wood mallet while supporting the bottom of the chuck.

   —If the chuck does not immediately come off, rotate the spindle approximately 60˚ and tap again. Make sure all the marks on the cams and spindle are in proper alignment.

To install a chuck or faceplate:

1. DISCONNECT LATHE FROM POWER!

2. Place a piece of plywood across the lathe ways and position it just under the chuck.

3. Place the chuck on the cradle.

4. Make sure the chuck taper and spindle taper mating surfaces are perfectly clean.

5. Inspect and make sure that all camlock studs are undamaged, are clean and lightly oiled, and that the camlock stud cap screws are in place and snug.

NOTICE

Never install a chuck or faceplate without having the camlock cap screws in place or fully tightened. If you ignore this notice, once installed the chuck may never be able to be removed since the camlock studs will turn with the camlocks and never release.

6. Align the chuck-to-spindle timing marks (**Figure 39**), and slide the chuck onto the spindle.

7. Turn a camlock with the chuck key until the cam line falls between the "**V**" marks (**Figure 38**).

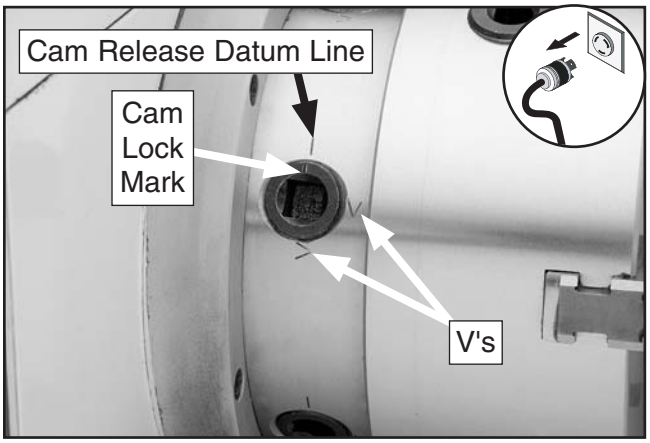


Figure 38. Cam and lock marks.

8. Lock the other cams in a star pattern so the chuck is drawn up evenly on all sides without any chance of misalignment.

   Note: *If any of the cam lock marks (**Figure 38**) do not fall between the "**V**" marks when the cam lock is tight, you must adjust the offending camlock stud as discussed in **Camlock Stud Adjustment** on **Page 37.***

9. Remove the chuck key.

Camlock Stud Adjustment

When fitting a chuck or faceplate with camlock studs, or when mounting a new chuck or faceplate, it may be necessary to adjust the camlock studs.

In order to properly install or adjust one or more camlock studs, you must remove a stud locking cap screw, then thread the camlock stud in or out until the line on the side of the stud is flush with the top of the chuck casting (**Figure 39**). This is an initial adjustment.

When you place the chuck onto the lathe spindle, you may find that one or more camlocks do not fully point between the "**V**" marks on the chuck.

If this is the case, you will have to remove the chuck and fine-tune the camlock stud adjustment. See **Figure 39** for which direction to turn the camlock studs.

Once you have adjusted the camlock studs, install the chuck or faceplate as outlined in **To Install Chuck or Faceplate** on **Page 36**.

NOTICE

Never install a chuck or faceplate without having the camlock cap screws in place or fully tightened. If you ignore this notice, the chuck may never be able to be removed since the camlock studs will turn with the camlocks and never release.

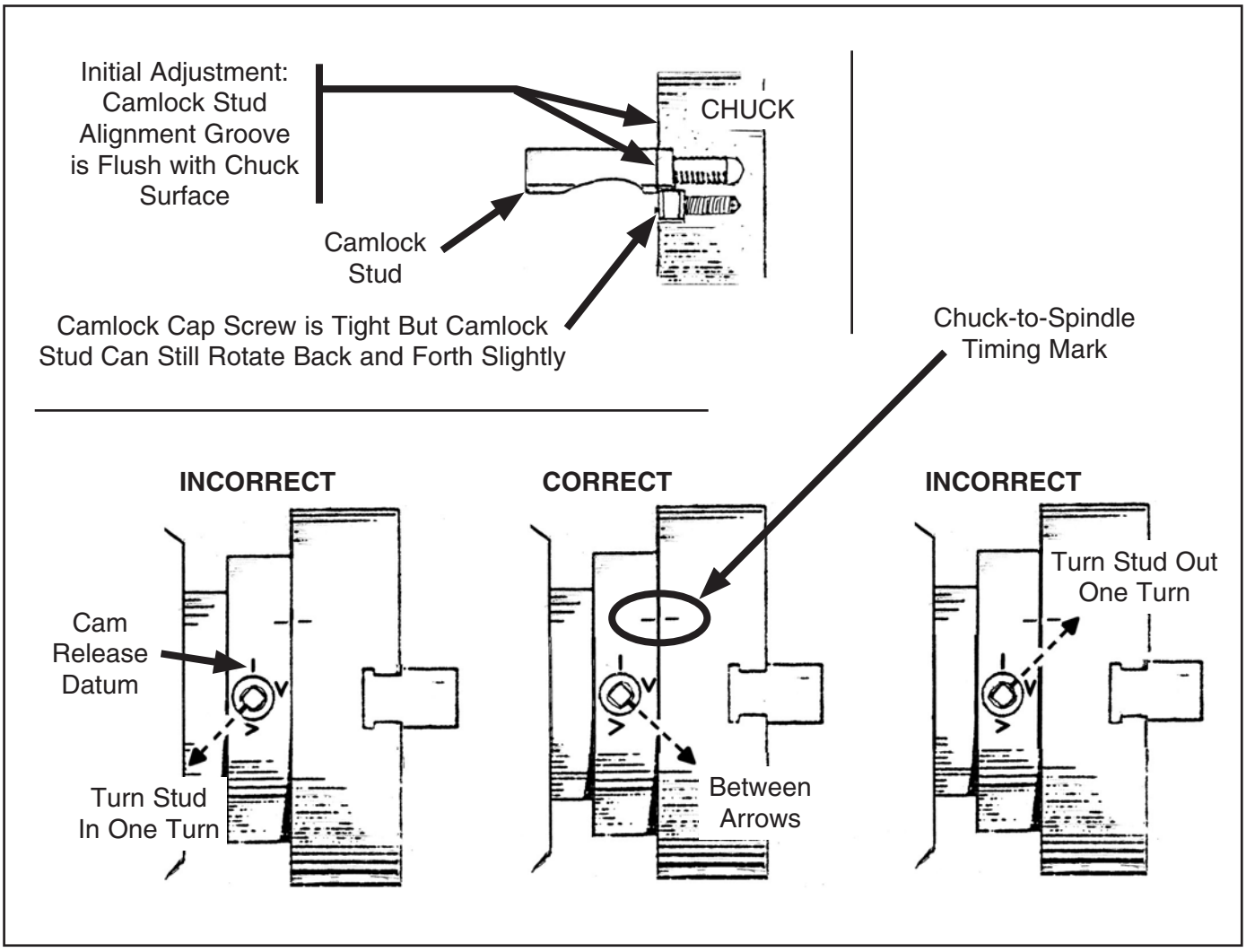


Figure 39. Camlock stud alignment.

SECTION 5: ACCESSORIES

H2670—HSS Square Tool Bits ½" x ½" x 4
Our ground tool bits are M-2 HSS, making them some of the most durable tool bits around. Make your own specialized cutters in any shape using a silicon carbide grinding wheel (G8235-37) on your grinder.

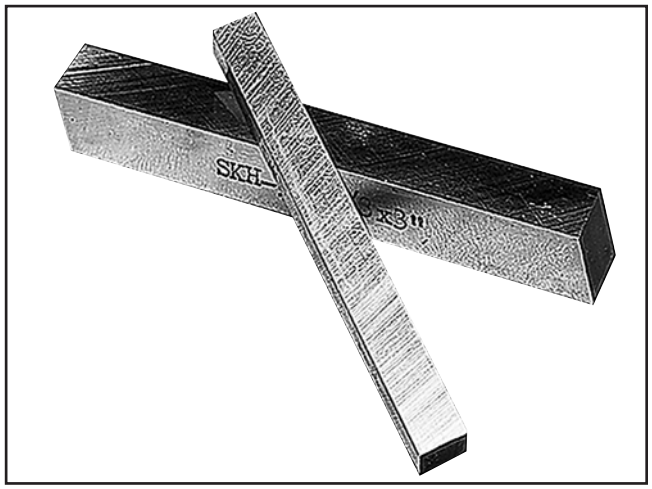


Figure 40. H2670 HSS Square Tool Bits.

H5687—8-Pc. Pre-Ground Tool Bit Set
Tired of grinding your blank high speed steel tool bits? We've done it for you! 8-pc set comes with these sharpened profiles: offset right and left hand tools with chip breaker, straight and chip breaker style threading tools, internal threading tool, parting tool, boring tool and turning tool. These tool bits are evenly hardened to better than 64C.

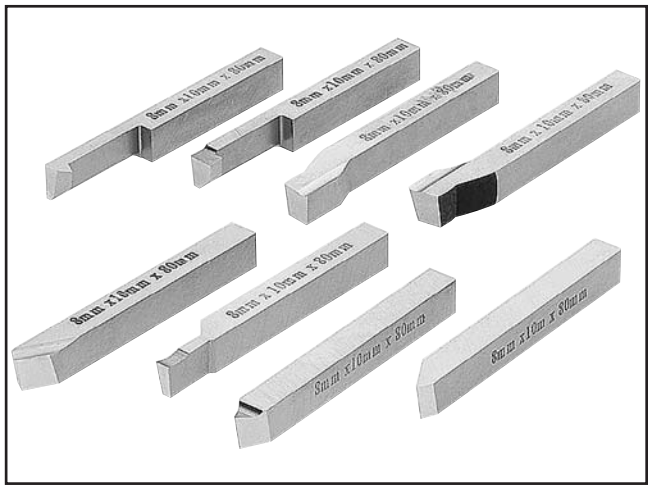


Figure 41. H5687 Pre-Ground Tool Bit Set.

G9777—20-Pc. Carbide Tipped Tool Bit Set
An exceptional value for carbide lathe tool bits! This twenty-piece set offers tremendous savings over bits sold individually, plus every type is duplicated and ready at hand when you need it. The carbide is C-6 grade for cutting steel and alloys.

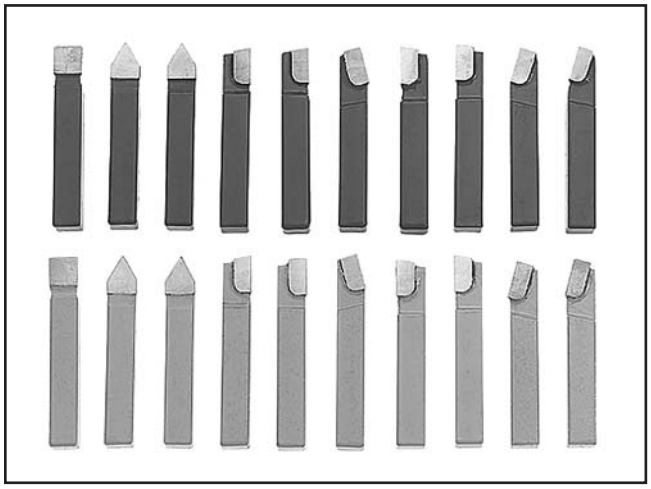


Figure 42. G9777 20 Pc. Carbide Tool Set.

G7978—15 HP/12 HP Start, Phase Converter
Add 3-phase electrical supply with this rotary phase converter! Operate single or multiple motors, transformers, and resistance loads at 100% power and 95% efficiency while saving big dollars at cheaply metered, single-phase electrical rates. For application assistance, please call our technical support group at (570) 546-9663.

Figure 43. Typical Rotary Phase Converter

Call 1-800-523-4777 To Order

Quick Change Tool Holders

All models below are Series 300
G5708—Boring Bar Holder, ¾" & 1" Bar
G5711—Parting Tool Holder, ¾" Tool
G5712—Knurling Tool Holder, ½"~ ¾" Tool
G5710—Morse Taper Holder, MT#4 Taper
G5707—Turning/Boring Holder, ½"~¾" Bits
G5706—Turning Holders, ½"~¾" Bits

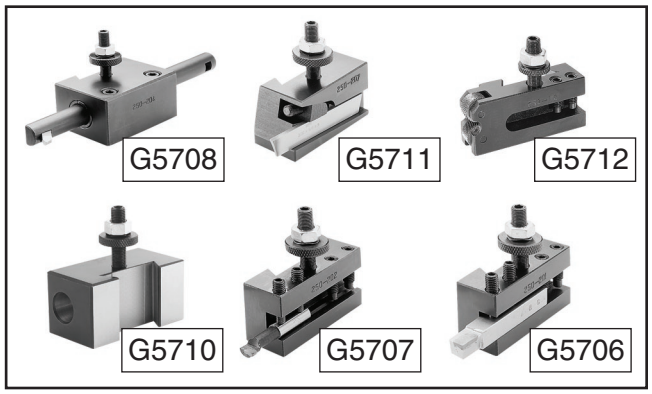


Figure 44. Series 300 quick change tool holders.

H5787—MT#4 x 5" Bull Nose Rolling Center
Built with precision sealed bearings, designed for heavy-duty use on hollow workpieces.

Figure 45. MT#4 bull nose rolling centers.

G9889—MT#4 Long Nose Precision Center
Provides critical tool clearance. Adjustable thrust bearings, 60° tip and 30° clearance relief angle.

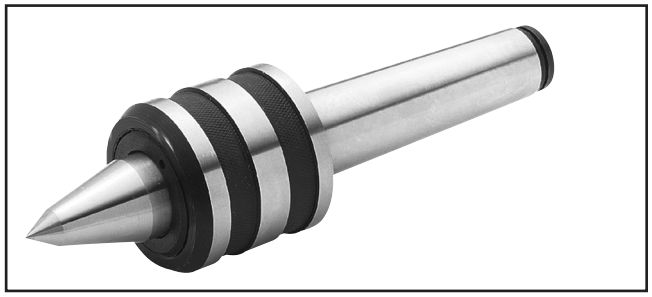


Figure 46. MT#4 Long Nose Center

G7038Z—Boring Bar
G7040—Carbide Inserts for Steel (5 pk)
G7048—Carbide Inserts for Cast Iron (5 pk)

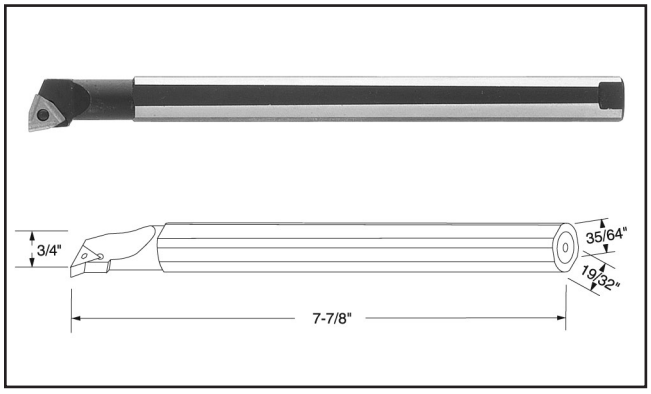


Figure 47. G7038Z Boring Bar.

G7030—Threading Tool Holder
G7041—Carbide Inserts for Steel (5 pk)
G7049—Carbide Inserts for Cast Iron (5 pk)

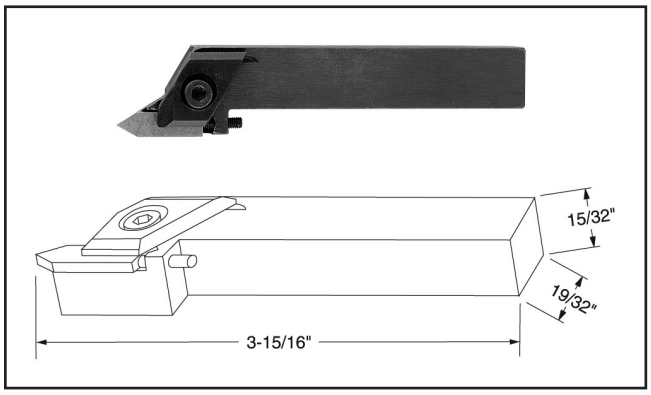


Figure 48. G7030 Threading Tool Holder.

G7033—Internal Threading Tool Holder
G7042—Carbide Inserts for Steel (5 pk)
G7050—Carbide Inserts for Cast Iron (5 pk)

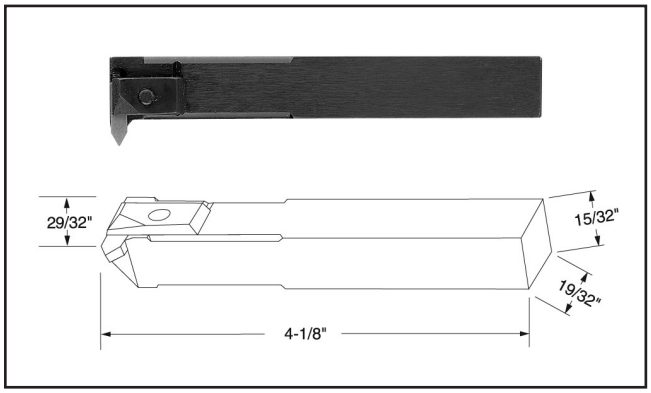


Figure 49. G7033 Int. Threading Tool Holder.

Call 1-800-523-4777 To Order

SECTION 6: MAINTENANCE

Basic Maintenance

Check for the following conditions and repair or replace when necessary:

- Loose mounting bolts and chuck.
- Worn switch or safety features.
- Worn or damaged power cord.
- Any other condition that could hamper the safe operation of this machine.

Lubrication

Take the time to wipe down and oil your lathe after use. Do not leave metal chips and cutting fluid on the ways. We recommend using ISO 68 or a general motor oil unless otherwise specified.

Saddle, Apron, Cross-Slide, and Compound Rest, see Figures 50 & 51
Apply lubrication to the saddle through all ball oilers on the saddle, slides, and rests. Make sure the oil level in the apron is full as seen through the sight glass. Change the apron oil for the first time after one month of operation, and then at one year intervals. Use the same oil as in the headstock, which is ISO 68 or a general 10W-30W motor oil.

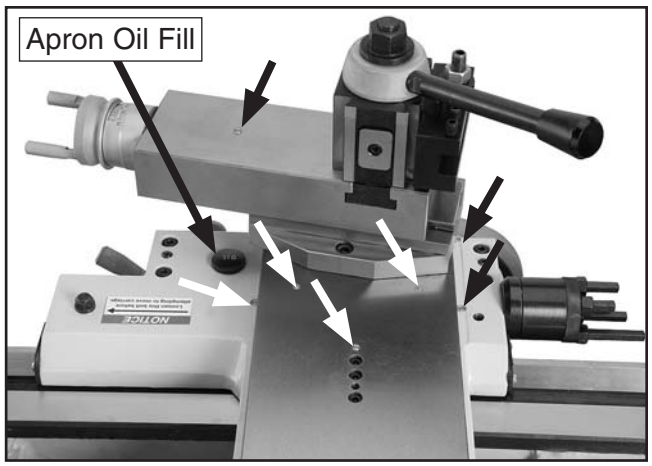


Figure 50. Saddle, compound rest, and cross slide ball oilers.

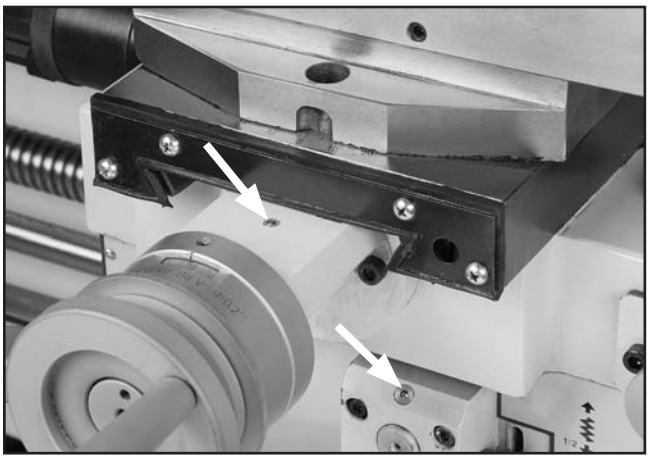


Figure 51. Slide ball oilers.

Apron Oil Pump, see Figure 52
To lubricate the saddle slide and the cross slide way guides, pull the oil pump knob out and hold it for two or three seconds, the pump will draw oil from the apron reservoir, and then push the knob in so the oil is pumped through drilled passages to the way guides. Repeat this process until the way guides are lubricated. Lubricate the guides once before and once after using the lathe. If the lathe is in an environment that has high moisture or is very dirty, increase the lubrication interval.

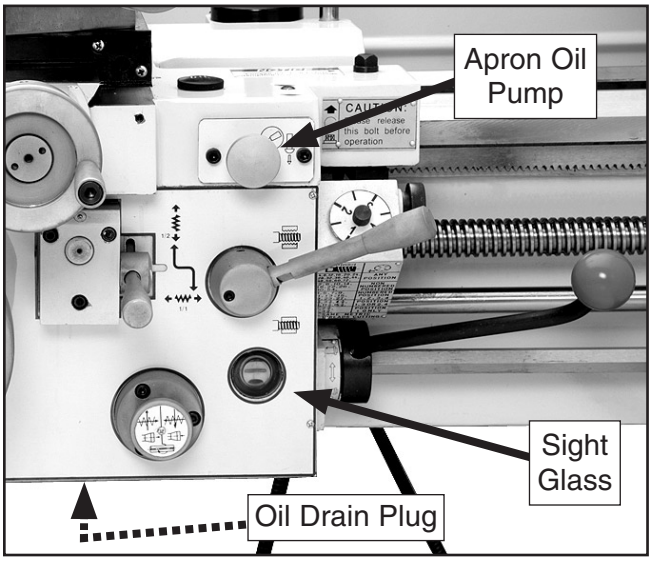


Figure 52. Apron Oil Pump.

External Gearing, Headstock and Gearbox, see Figure 53
Brush on a coat of lithium grease on the teeth of the drive gears. Avoid getting grease on the belt or pulleys when lubricating. Change the oil in the headstock after the first 2 hours of use; then, every 6 months depending on usage. Use ISO 68 or a general 10W-30W motor oil.

Note: *The headstock oil fill plug is located on the top of the headstock plate, labeled OIL.*

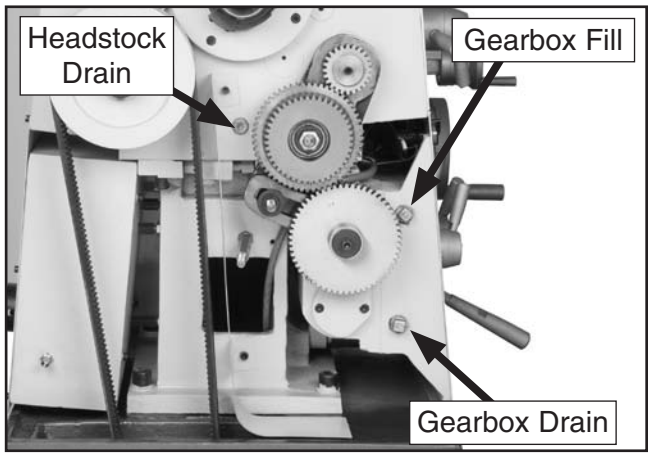


Figure 53. Headstock lubrication.

Tailstock , see Figure 54
The tailstock is fitted with two ball oilers. The tailstock barrel may be oiled directly. Apply oil each week, or after every few uses (depending on the frequency of operation). Be sure to clean the slide ways for the tailstock and lift the tailstock and squirt a few drops of oil on the ways. It is a good idea to remove the tailstock once a month and wipe the bottom thoroughly and relubricate the way tracks.

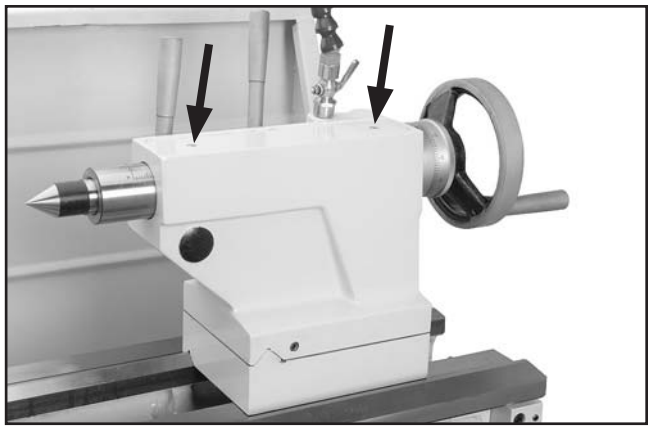


Figure 54. Tailstock lubrication.

Lead Screw, Feed Rod, Slides, and Ways, see Figure 55
Be sure to clean and lubricate the leadscrew, feed rod and switch control rod. The lead screw and feed rod have a bearing on the tail stock end support that requires one to two squirts of oil. Apply oil to the ways and slides after each use. Wipe the ways with a clean rag prior to lubrication to ensure that no grime is carried along with your lubricant into friction-sensitive areas. Applying oil to the bedways and other bare metal parts also protects the lathe from rust and pitting.

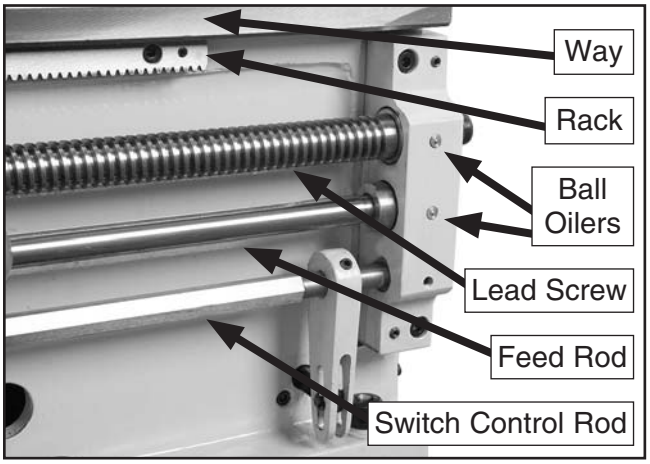


Figure 55. General lubrication.

Coolant System

⚠WARNING

BIOLOGICAL & POISON HAZARD! Use the correct personal protection equipment when handling cutting fluid and by follow federal, state, and fluid manufacturer requirements to properly dispose of cutting fluid.

The coolant pump and reservoir are located in the base behind the vented cover on the tailstock end of the lathe.

The chip pan is fitted with a screen, so pay attention that it does not become clogged, fill the chip pan with coolant, and cause the pump to operate in an empty reservoir. Pump damage will cccur if it is run for a period of time without coolant.

To perform regular maintenance on the cutting fluid system:

1. Remove the access cover at the rear of the lathe (**Figure 56**).

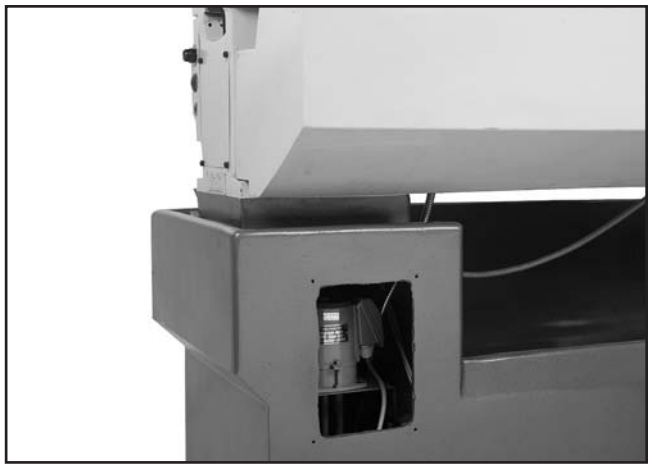


Figure 56. Coolant pump and reservoir.

2. Pump the old cutting fluid out of the reservoir and dispose of according to state and federal environmental laws.

3. Using a magnet, brush, and rags, clean out metal chips from the bottom of the reservoir and the screen. Flush with hot soapy water if required.

4. Refill the reservoir with applicable water-soluble cutting fluid. Closely follow the fluid manufacturer's instructions for mixing.

5. Open the valve on the coolant nozzle.

6. Turn the coolant pump ***ON*** (**Figure 57**) to prime the coolant system and to see if the coolant is cycling properly.

7. Replace the access cover.

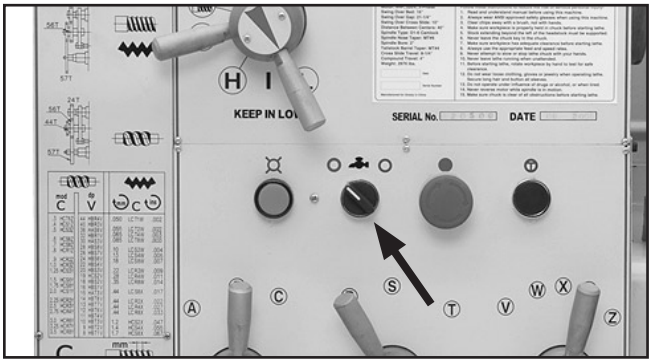


Figure 57. Coolant pump switch.

SECTION 7: SERVICE

Troubleshooting

Review the troubleshooting and procedures in this section to fix your machine if a problem develops. If you need replacement parts or you are unsure of your repair skills, then feel free to call our Technical Support at (570) 546-9663.

Motor & Gearbox

Symptom	Possible Cause	Possible Solution
Motor will not start.	1. Main power panel switch is ***OFF***. 2. Emergency switch is pushed in. 3. Spindle rotation switch at fault. 4. Circuit breaker or fuse has tripped. 5. No voltage or open connection. 6. Motor direction switch is at fault. 7. Power switch or magnetic contactor is at fault. 8. Motor is at fault.	1. Turn the main power panel switch ***ON***. 2. Emergency switch is pushed in. 3. Rotate the switch so it points to 1 or 2, or replace bad switch. 4. Seek an electrician to troubleshoot and repair the shop power supply. 5. Test circuit, replace wires and connections as required. 6. Replace switch. 7. Replace power switch or magnetic contactor. 8. Replace motor.
Fuses or circuit breakers trip open.	1. Short circuit in line cord or plug. 2. Short circuit in motor or loose connections. 3. Incorrect fuses or circuit breakers in power supply.	1. Inspect cord or plug for damaged insulation and shorted wires. 2. Inspect all connections on motor for loose or shorted terminals or worn insulation. 3. Install correct fuses or circuit breakers.
Machine is loud, belt slips, or bogs down during a cut.	1. Excessive depth of cut. 2. RPM or feed rate wrong for operation. 3. Dull cutters. 4. Belt is slipping. 5. Belt is at fault.	1. Decrease depth of cut. 2. Refer to RPM feed rate chart for appropriate rates. 3. Sharpen or replace cutters. 4. Remove grease or oil on belt or pulleys/tighten belt tensioner against low range belt. 5. Replace belt.
Gear change levers will not shift into position.	1. Gears not aligned in headstock.	1. Rotate spindle by hand until gear falls into place.
Loud, repetitious noise coming from machine at or near the motor.	1. Pulley set screws or keys are missing or loose. 2. Motor fan is hitting the cover.	1. Inspect keys and set screws. Replace or tighten if necessary. 2. Tighten fan or shim cover, or replace items.
Motor is loud when cutting. Overheats or bogs down in the cut.	1. Excessive depth of cut or feed rate. 2. RPM or feed rate wrong for cutting operation. 3. Cutting tool is dull. 4. Gear setup is too tight, causing them to bind.	1. Decrease depth of cut or feed rate. 2. Refer to RPM feed rate chart for appropriate rates. 3. Sharpen or replace the cutting tool. 4. Readjust the gear setup with a small amount of backlash so the gears move freely and smoothly when the chuck is rotated by hand.

Troubleshooting

Operation and Work Results

Symptom	Possible Cause	Possible Solution
Entire machine vibrates excessively upon startup and while running.	1. Workpiece is unbalanced. 2. Worn or broken gear present. 3. Chuck or faceplate has become unbalanced. 4. Spindle bearings at fault.	1. Reinstall workpiece so it is as centered with the spindle bore as possible. 2. Inspect gears and replace if necessary. 3. Rebalance chuck or faceplate; contact a local machine shop for help. 4. Tighten or replace spindle bearings.
Cutting tool or machine components vibrate excessively during cutting.	1. Tool holder not tight enough. 2. Cutting tool sticks too far out of tool holder; lack of support. 3. Gibs are out of adjustment. 4. Dull cutting tool. 5. Incorrect spindle speed or feed rate.	1. Check for debris, clean, and retighten. 2. Reinstall cutting tool so no more than 1/3 of the total length is sticking out of tool holder. 3. Tighten gib screws at affected component. 4. Replace or re-sharpen cutting tool. 5. Use the recommended spindle speed.
Can't remove tapered tool from tailstock quill.	1. Quill was not retracted all the way back into the tailstock. 2. Debris was not removed from taper before inserting into quill.	1. Turn the quill handwheel until it forces taper out of quill. 2. Always make sure that taper surfaces are clean.
Cross slide, compound rest, or carriage feed has sloppy operation.	1. Gibs are out of adjustment. 2. Handwheel is loose. 3. Lead screw mechanism worn or out of adjustment.	1. Tighten gib screw(s). 2. Tighten handwheel fasteners. 3. Tighten any loose fasteners on lead screw mechanism.
Cross slide, compound rest, or carriage feed handwheel is hard to move.	1. Carriage lock is engaged. 2. Gibs are loaded up with shavings or grime. 3. Gib screws are too tight. 4. Backlash setting too tight (cross slide only). 5. Bedways are dry.	1. Loosen the carriage lock. 2. Remove gibs, clean ways/dovetails, lubricate, and readjust gibs. 3. Loosen gib screw(s) slightly, and lubricate bedways. 4. Slightly loosen backlash setting by loosening the locking screw and adjusting the spanner ring at the end of the handle. 5. Lubricate bedways and handles.
Bad surface finish.	1. Wrong RPM or feed rate. 2. Dull tooling or poor tool selection. 3. Too much play in gibs. 4. Tool too high.	1. Adjust for appropriate RPM and feed rate. 2. Sharpen tooling or select a better tool for the intended operation. 3. Tighten gibs. 4. Lower the tool position.
Inaccurate turning results from one end of the workpiece to the other.	1. Headstock and tailstock are not properly aligned with each other.	1. Realign the tailstock to the headstock spindle bore center line.
Chuck jaws won't move or don't move easily.	1. Chips lodged in the jaws.	1. Remove jaws, clean and lubricate chuck threads, and replace jaws.
Carriage won't feed, or hard to move.	1. Gears are not all engaged or broken. 2. Gibs are too tight. 3. Loose screw on the feed handle. 4. Lead screw shear pin has sheared.	1. Adjust gear positions or replace. 2. Loosen gib screw(s) slightly. 3. Tighten. 4. Correct for cause of shear pin breakage, and replace shear pin.
Tailstock quill will not feed out of tailstock.	1. Quill lock lever is tightened down.	1. Turn lever counterclockwise.

Gibs

There are three main gib adjustments for the lathe. They are: the cross-slide gib, the compound slide gib, and the saddle gib.

Cross-slide Gib, see Figure 58
The gib on the cross-slide is adjusted by the two screws located at each end. To adjust, loosen the set screw located along the edge of the cross-slide. This set screw is provided for locking the slide for certain operations. After making the adjustments detailed below, tighten the set screw until it just touches the gib.

The gib is wedge shaped and by loosening the screw closest to the operator and then tightening the opposite screw, the slide will become looser. Conversely, loosening the screw farthest away from the operator and tightening the closer screw will tighten the gib. *Do not over tighten.*

Adjust the gib so that it creates a slight drag when the slide is in motion. Test the ease of motion with the gib slightly loose. Begin tightening the gib and test after making small adjustments. When a slight

NOTICE

When adjusting gibs, keep in mind that the goal of gib adjustment is to remove unnecessary sloppiness from the slide movement without causing them to bind. Loose gibs may cause poor finishes on the workpiece. Over tightening may cause premature wear.

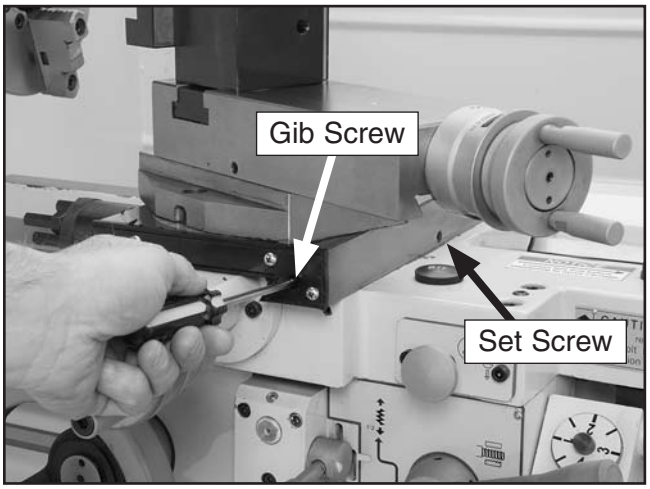


Figure 58. Adjusting the cross-slide gib.

Compound Gib, see Figure 59
The gib on the compound is adjusted by the same method as the gibs on the cross-slide, *except* the screw closest to the operator (when the compound slide is aligned with the cross slide) must be loosened and the screw furthest from the operator tightened to make the gib tighter.

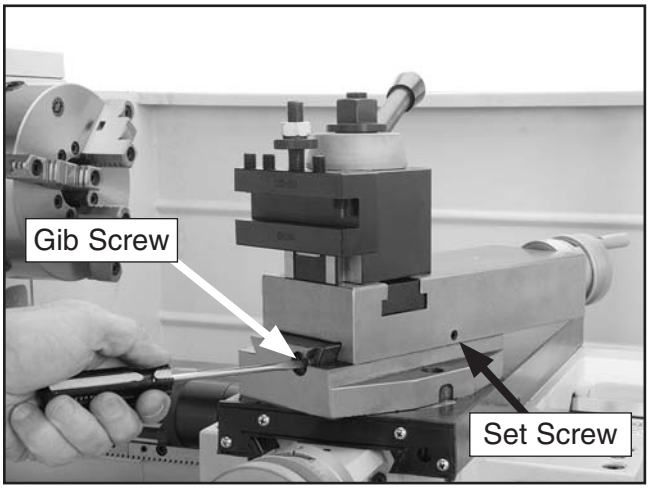


Figure 59. Adjusting the compound rest gib.

Saddle Gib and Carriage Lock, see Figure 60
Located at the back side of the saddle, the saddle gib is adjusted by the same method as the gibs on the cross-slide and compound rest. However, you must make sure that you loosen the carriage lock bolt. This bolt is used to lock the carriage in place for increased rigidity when making face cuts.

It is important that the saddle gib be properly adjusted. A loose gib will cause finish problems in a workpiece. A gib adjusted too tightly will cause premature wear.

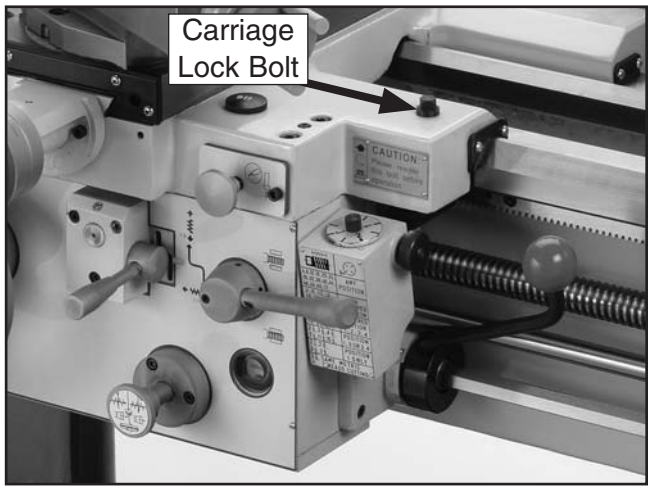


Figure 60. Carriage lock bolt.

Cross Slide Leadscrew Adjustment

Backlash is the amount of play found in a lead screw. It can be found by turning the cross slide handwheel in one direction, then turning the handwheel the other direction. When the cross slide begins to move, the backlash has been taken up.

Note: *Avoid the temptation to overtighten the cross slide backlash screw. Overtightening will cause excessive wear to the sliding block and lead screw. Reducing backlash to less than 0.010" is impractical and reduces cross slide life.*

Backlash is adjusted by tightening or loosening the cap screws shown in **Figure 61**. These screws draw a wedge-type nut against the lead screw and main nut. If you get the gib too tight, loosen the cap screws a few turns, tap the cross slide a few times with a rubber or wooden mallet, and turn the handle slowly back and forth until the handle turns freely. To readjust the backlash, rock the handle back and forth, and tighten the screw slowly until the backlash is at approximately 0.010" as indicated on the handwheel dial.

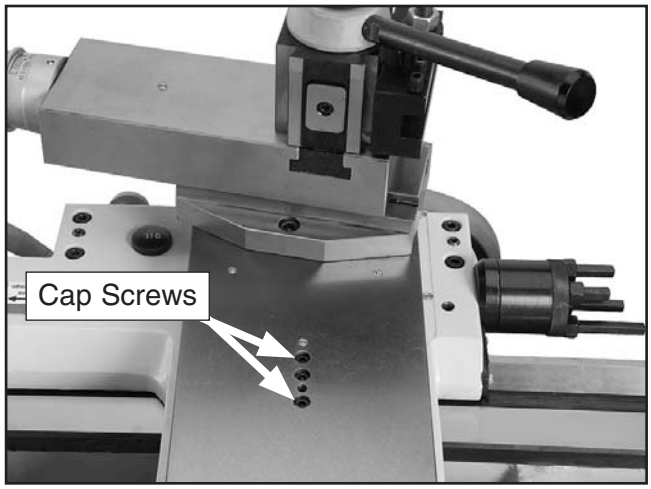


Figure 61. Cross slide backlash adjustment socket head cap screws.

Leadscrew Endplay Adjustment

After a long period of time, you may find that the lead screw for threading operations may develop a bit of end play. This lathe is designed so that this play can be removed.

To remove leadscrew end play:

1. DISCONNECT LATHE FROM POWER.

2. Using a 3mm hex wrench, loosen the retainer set screw (**Figure 62**).

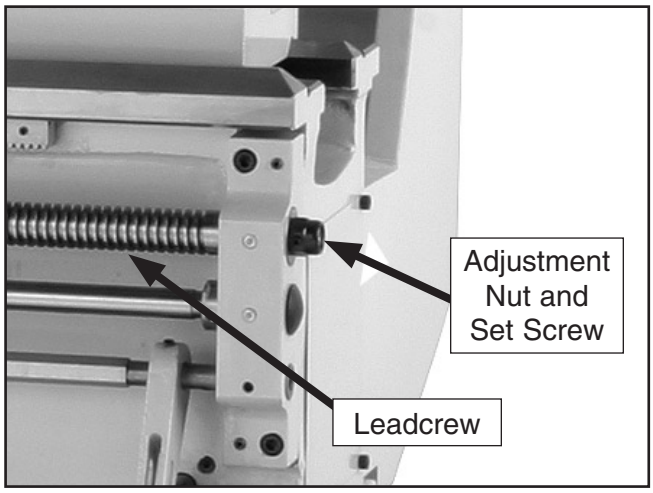


Figure 62. Leadscrew end play adjustment location.

3. Engage the halfnut lever and manually rotate the manual apron feed handwheel back and forth slightly to test for end play. While you are doing this, tighten the adjustment nut with a 22mm wrench until all leadscrew-endplay is removed.

4. Tighten the set screw.

Halfnut Adjustment

To adjusted the halfnut gibs, remove the thread dial to expose the two gib screws (**Figure 63**). Your goal is to remove sloppiness in the ways without causing the half nut to bind. You will loosen the jam nuts and turn the two set screws clockwise until slight tension is felt in the set screw. The gibs will then be slightly pre-loaded. Tighten the jam nuts when finished.

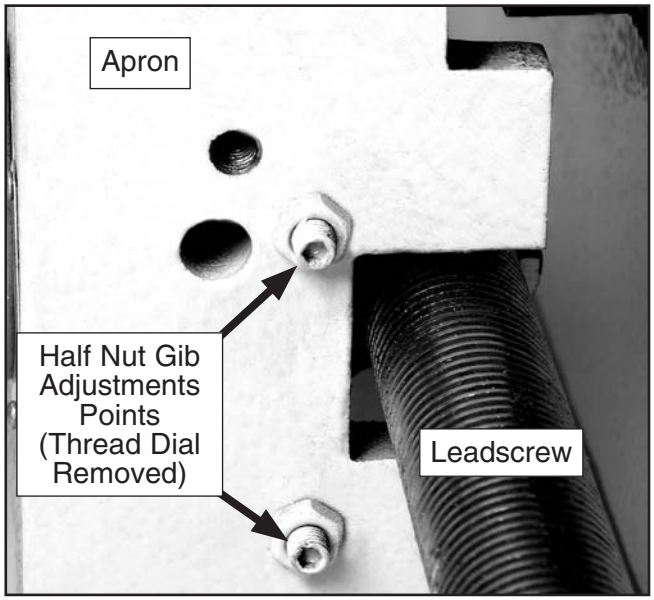


Figure 63. Typical halfnut gib adjustment screws.

V-Belts

During the life of the lathe, it will be necessary to compensate for belt wear.

To adjust or replace the V-belts on the lathe:

1. DISCONNECT LATHE FROM POWER!
2. Open the lathe base end cover (**Figure 64**).
3. Using a wrench, adjust the belt tension hex nuts (see **Figure 64**) until there is approximately ½" belt deflection on each belt when pressed firmly in the center between the pulleys.

   Note: *Replace all three belts as a matched set even if one shows cracking, glazing, or fraying.*
4. Reinstall the rear cover.

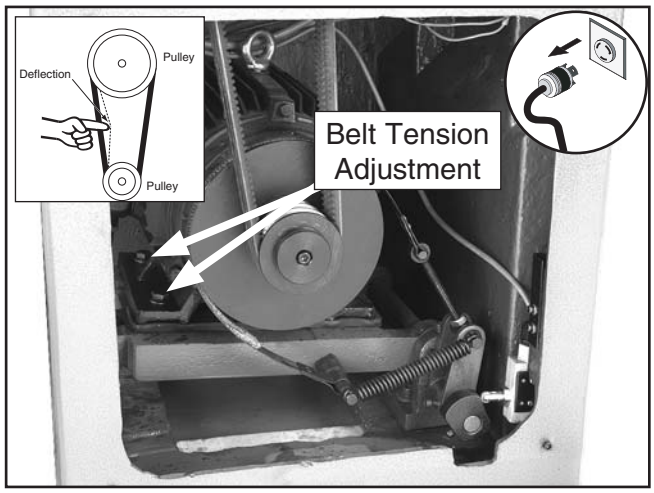


Figure 64. V-belt adjustment.

Brake & Switch

After consistent lathe usage, it will be necessary to compensate for brake lining wear.

To adjust the brake and brake switch:

1. DISCONNECT LATHE FROM POWER!
2. Open the lathe base end cover (**Figure 64**).
3. Using a wrench, adjust the brake rod (**Figure 65**) so, when the foot pedal is pressed, the brake band firmly clamps the drum. When released, the brake band should be loose on the drum.

   Note: *Replace the brake band when the friction material is worn down to approximately 2mm thick.*

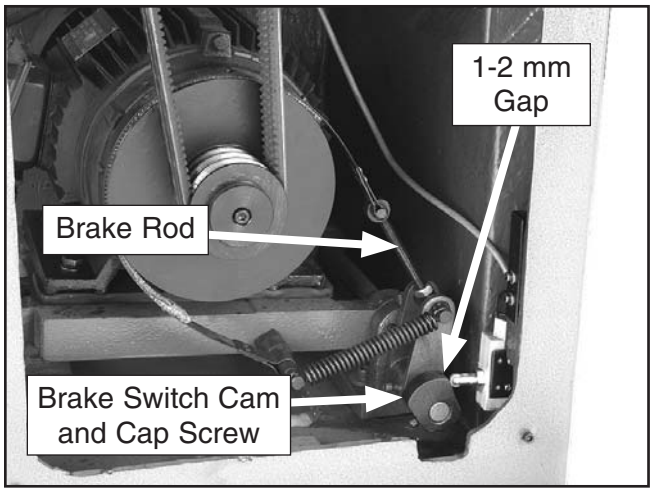


Figure 65. Brake band and switch.

4. Adjust the brake switch cam so when in the released position, there is 1 to 2mm gap between the cam and the brake switch push-rod roller (**Figure 65**).
5. Reinstall the safety cover and test foot brake operation.

Bearing Preload

This lathe is shipped from the factory with the spindle bearing preload adjusted. If the spindle ever develops a bit of end-play and the workpiece finish suffers, you can adjust the bearing pre-load to remove the end-play and improve the workpiece finish.

Adjusting the bearing preload requires using a spanner wrench or a punch and hammer. You can either purchase the spanner wrench at a tool store or fabricate one, using the diagram shown below in **Figure 66**.

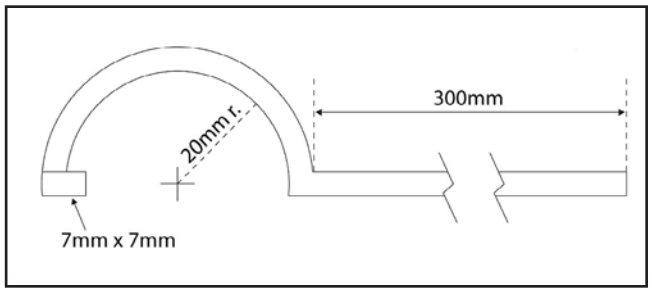


Figure 66. Spanner wrench diagram.

To adjust the preload:

1. Run the lathe for 20 minutes on high speed to bring the lathe to normal operating temperature.

2. DISCONNECT THE LATHE FROM THE POWER SOURCE!

3. Remove the chuck, shift the spindle to neutral, then remove the lathe end cover to expose the outboard spindle and spanner nut (**Figure 67**).

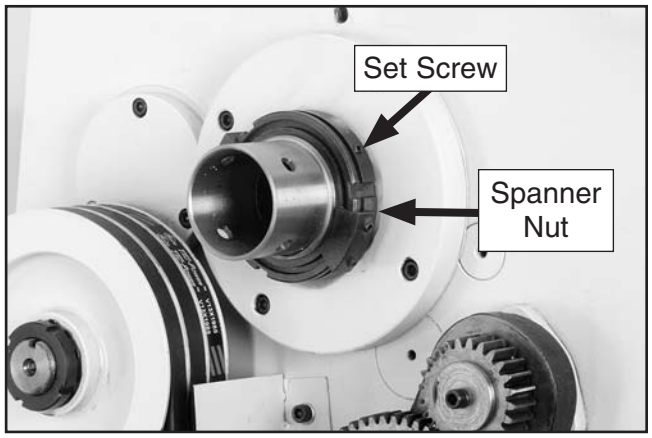


Figure 67. Outboard spindle/spanner nut.

4. Using a 3mm hex wrench, remove the spanner nut locking set screw (**Figure 67**).

5. Place the chuck key in the cam-lock socket to keep the spindle from rotating.

6. Using a spanner wrench, or hammer-and-punch, loosen the spanner lock nut (**Figure 68**) counterclockwise three turns.

   Note: *You may have to tap on the outboard spindle tube as explained in **Step 13** to help unload the spindle and break the spanner nut loose.*

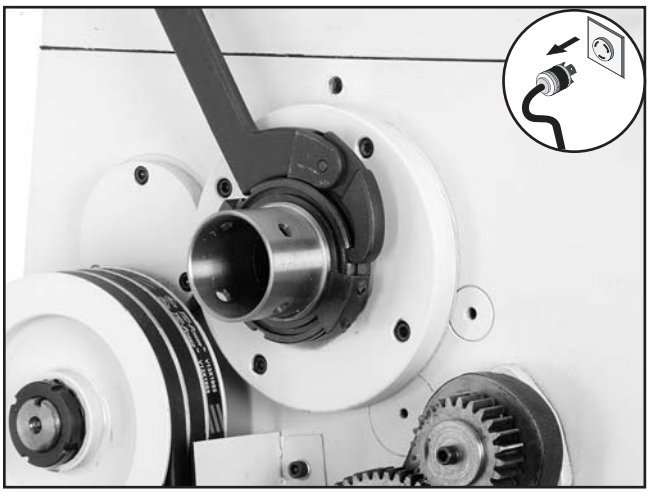


Figure 68. Loosening outboard spanner nut.

7. Place a dial indicator on the cross slide and move the carriage toward the headstock until the contact point of the indicator touches the spindle face (**Figure 69**).

Figure 69. Dial indicator setup.

8. Move the carriage an additional 0.100" toward the headstock.

9. Using a 5mm hex wrench, remove the headstock lid to expose the headstock gears.

10. Remove the preload spanner nut set screws (**Figure 70**) with a 3mm hex wrench.

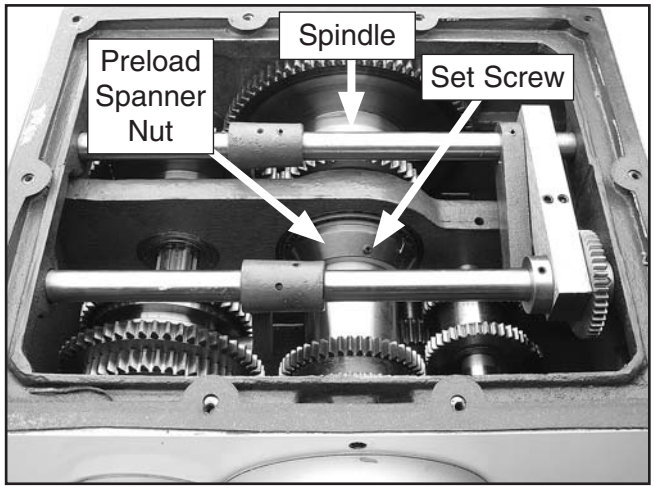


Figure 70. Preload spanner nut.

11. Place the chuck key in the cam-lock socket and keep the spindle from rotating.

12. Using a spanner wrench, or hammer-and-punch, loosen the preload spanner nut (**Figure 70**) counterclockwise 1 turn.

13. Place a wooden block over the outboard end of the spindle, hit the block soundly with a metal or heavy dead blow hammer (**Figure 71**). Your goal is to slide the spindle forward just enough to introduce spindle end-play that you can feel by hand.

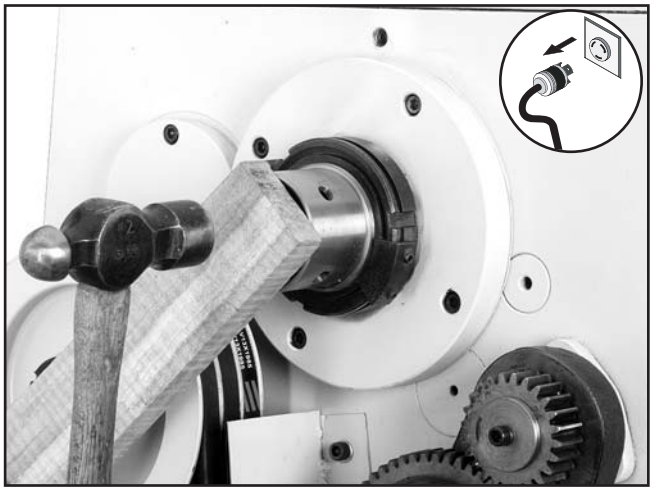


Figure 71. Introducing detectable end-play.

Since it can take great effort to turn the preload spanner nut, you may find it difficult to know if you have gone past the zero end-play point or not. You may find it easiest to have someone watch the dial for you while you tighten the inner spanner nut. If you think you may have gone past the zero end-play point, take the time to unload the bearings as described earlier, then re-tighten the inner spanner nut until you know you have reached the correct setting.

When you are confident that you have adjusted the preload spanner nut until zero spindle end-play and but preload exists, you now must move the spanner nut inward and additional 0.001" to set the preload.

14. To set the preload, rotate the spanner nut an additional 0.16" as shown in **Figure 72**.

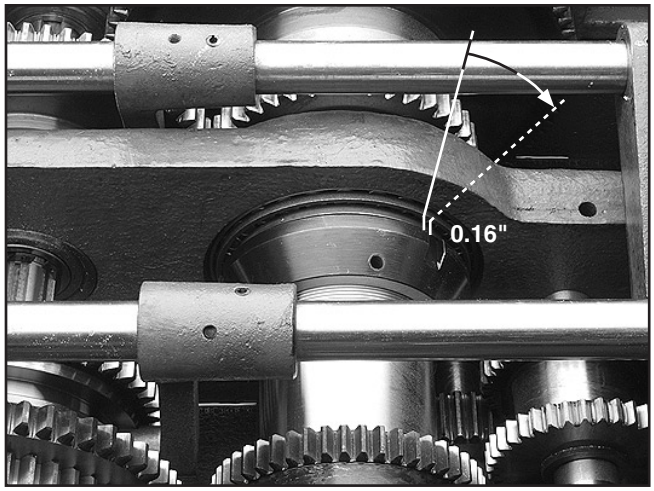


Figure 72. Preload spanner nut adjustment.

15. Reinstall the setscrews in the preload spanner nut.

16. Position the gasket correctly, and re-install the headstock cover.

17. Tighten the outboard spindle spanner nut until it is snug and reinstall the locking setscrew.

18. Reinstall the lathe end cover, and make sure the counterweights (**Figure 73**) do not rub on the cover when the lathe is turned on.

To confirm that the bearings are correctly preloaded:

1. Make sure all safety precautions have been taken and setup steps are complete to make the lathe fully operational.

2. Install the chuck and tighten the jaws.

3. Set the spindle speed to its highest setting.

4. Connect the lathe to power and turn the lathe spindle ***ON***.

5. Let the lathe run for 20 minutes.

6. Turn the spindle ***OFF***, disconnect lathe from power, and check the temperature of the spindle.

   —If the spindle nose is hotter than you can comfortably keep your hand on, the preload is too tight and you must repeat the bearing preload adjustment procedure.

   —If the spindle nose is slightly warm to the touch, you have correct bearing preload. Now complete **Spindle Balancing** procedure.

Spindle Balancing

After the spindle has been broken in, or if the lathe has been used for a considerable amount of time, you should adjust the spindle weights to minimize spindle vibration.

To minimize spindle vibration:

1. Run the lathe for five minutes on the fastest RPM.

2. DISCONNECT LATHE FROM POWER!

3. Open the side cover, loosen the counter weight set screws (**Figure 73**), and reposition one or both counterweights to a new position around the circumference of the spanner nut.

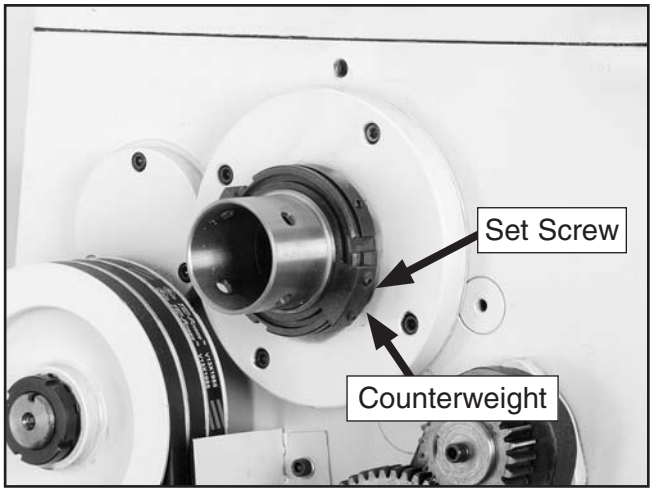


Figure 73. Spindle counterweights.

4. Close the side cover, reconnect to power, restart the lathe, and run at 900 RPM.

5. Place your hand on the headstock cover and feel for harmonic vibration.

6. Repeat **Steps 2–5** until vibration is reduced to a minimum.

7. Now, repeat **Steps 2–5** at 1800 RPM until vibration is reduced to a minimum.

Main Electrical Box

Note: *See **Pages 56** and **57** for wire connections.*

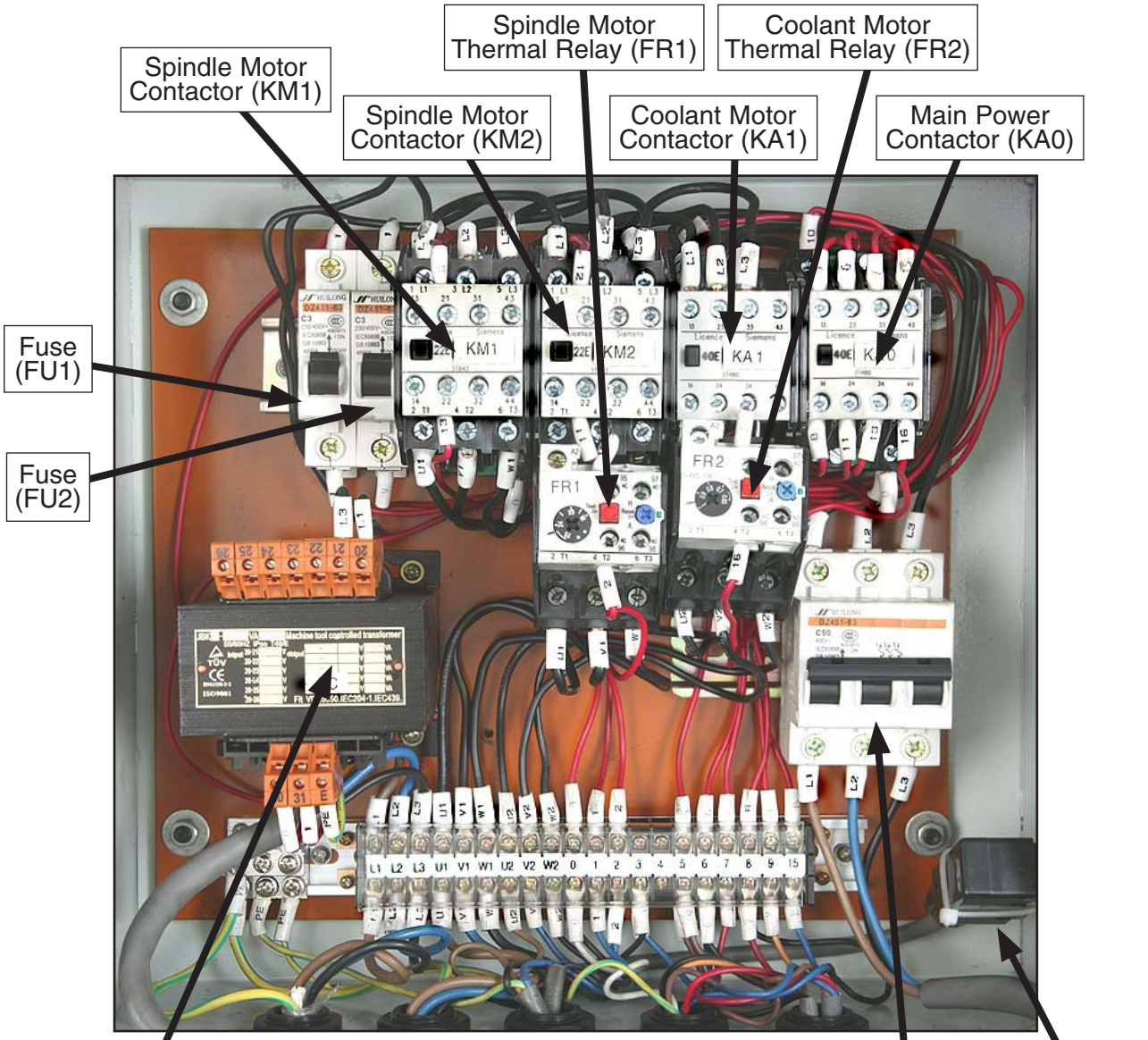


Figure 74. Electrical box wiring.

Figure 75. Main Power switch (S) connections.

Motors & Switches

Note: *See **Pages 56** and **57** for wire connections.*

Figure 76. Spindle motor (M1) connections.

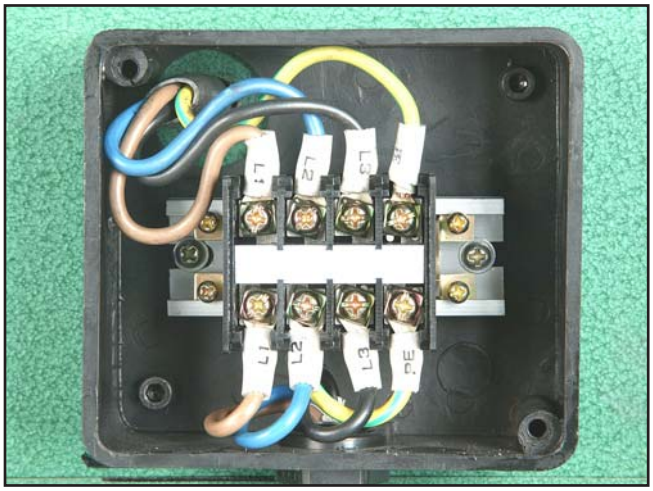


Figure 79. Power-in junction box connections.

Figure 77. Pump motor (M2) connections.

Figure 80. Brake switch (SQ1).

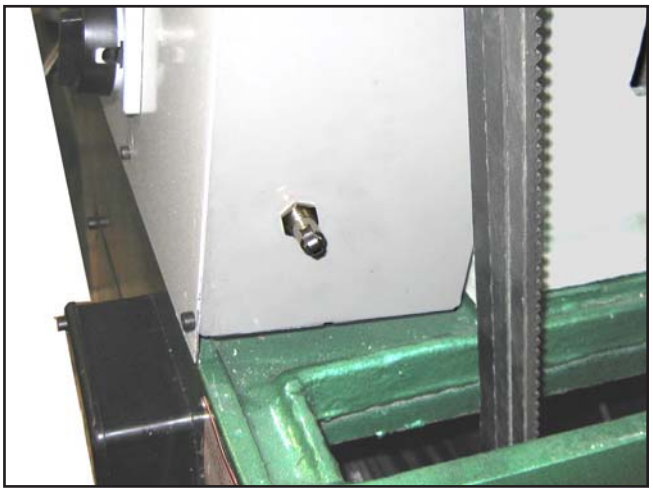


Figure 78. Belt cover safety switch (SQ3).

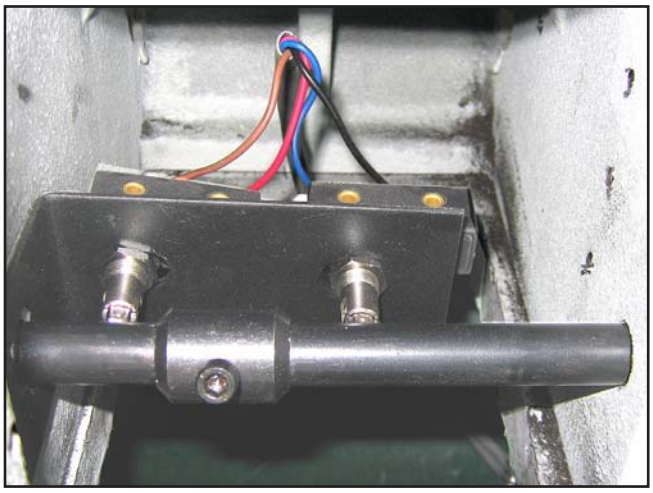


Figure 81. Spindle motor rotation switches (SQ4, SQ5).

Control Panel & Switches

Note: *See **Pages 56** and **57** for wire connections.*

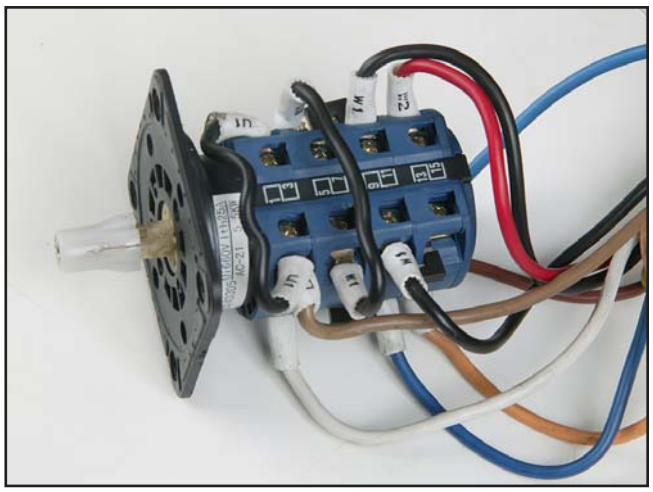


Figure 82. Motor speed switch (SA), side 1.

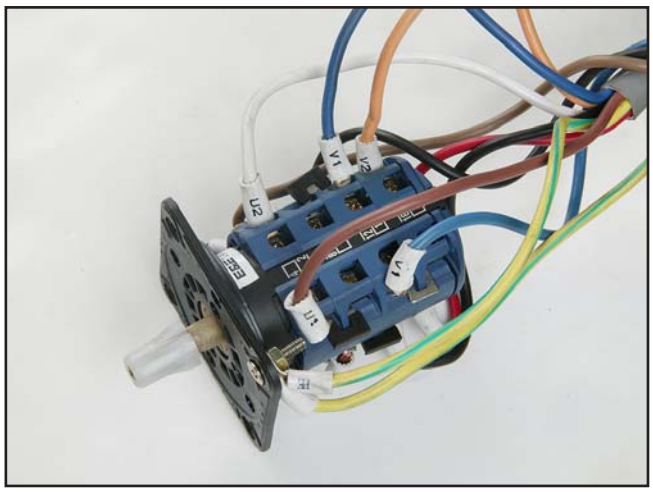


Figure 83. Motor speed switch (SA), side 2.

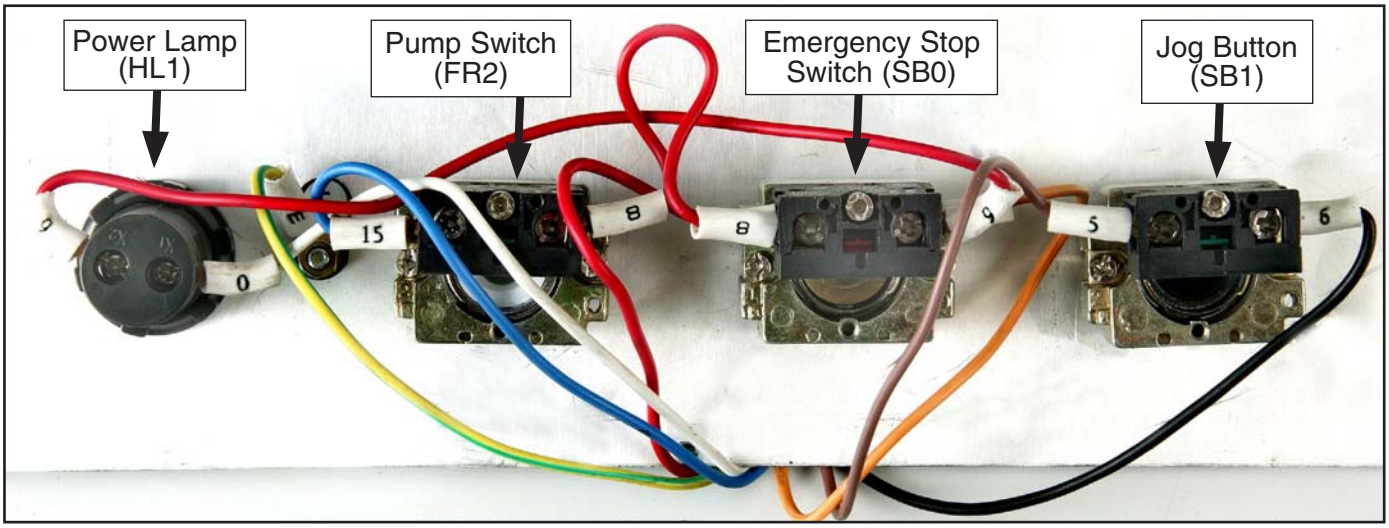


Figure 84. Control panel).

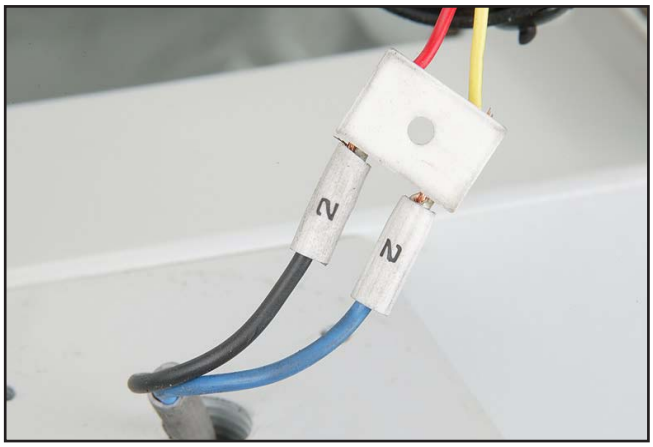
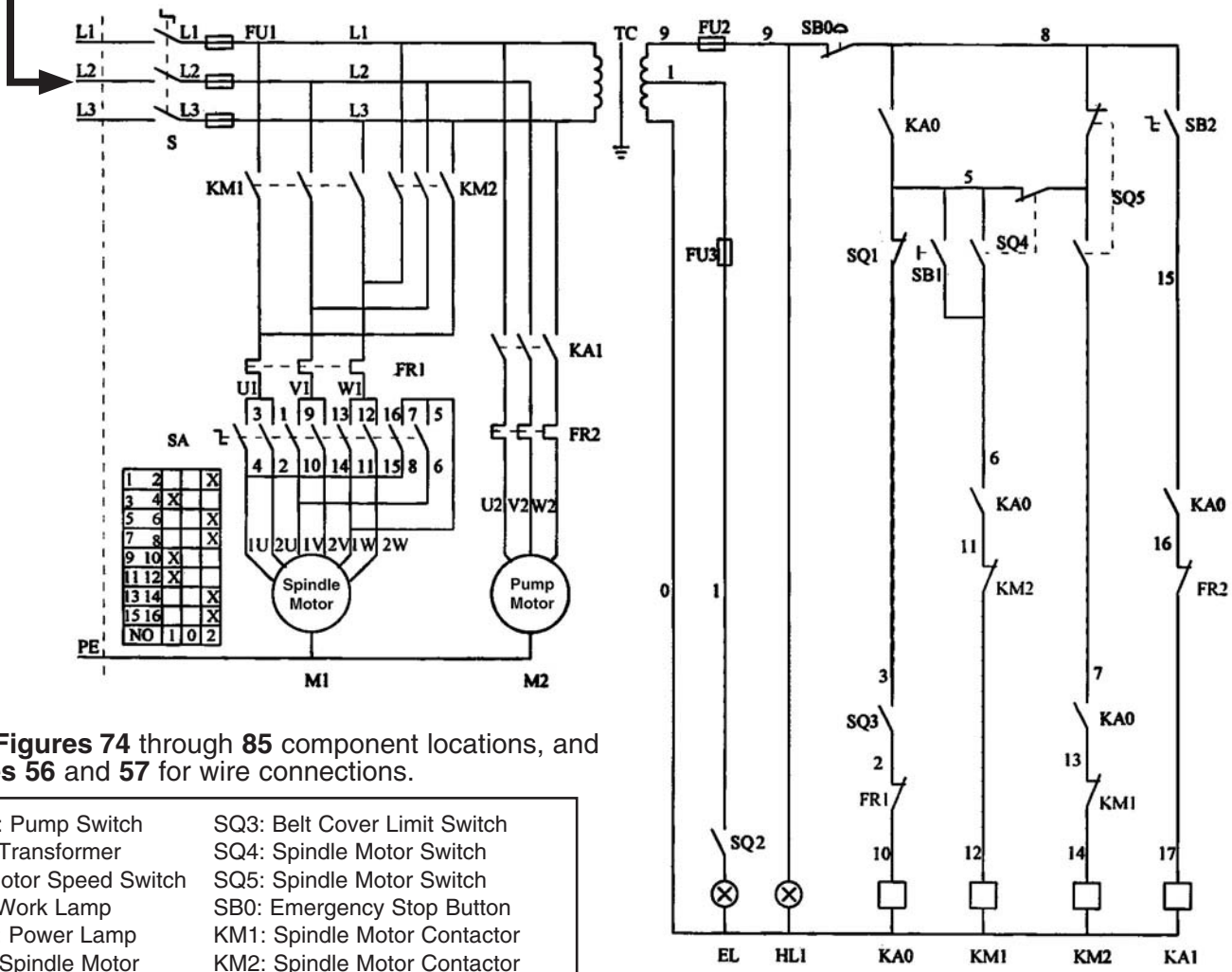


Figure 85. Work lamp (EL).

Component Relationship Diagram

If a phase converter is being used, connect the "Wild Wire" or "Manufactured Leg" to L2 or contactor and transformer failure may result!



See **Figures 74** through **85** component locations, and **Pages 56** and **57** for wire connections.

SB2: Pump Switch	SQ3: Belt Cover Limit Switch
TC: Transformer	SQ4: Spindle Motor Switch
S: Motor Speed Switch	SQ5: Spindle Motor Switch
EL: Work Lamp	SB0: Emergency Stop Button
HL1: Power Lamp	KM1: Spindle Motor Contactor
M1: Spindle Motor	KM2: Spindle Motor Contactor
M2: Pump Motor	FR1: Spindle Motor Thermal Relay
FU2: Fuse	KA1: Pump Contactor
FU3: Fuse	KA0: Master Power Contactor
SB1: Jog Button	FR2: Pump Motor Thermal Relay
SQ1: Brake Switch	FU1: Main Circuit Breaker
SQ2: Work Lamp Switch	

Main Electrical Box Wiring Diagram

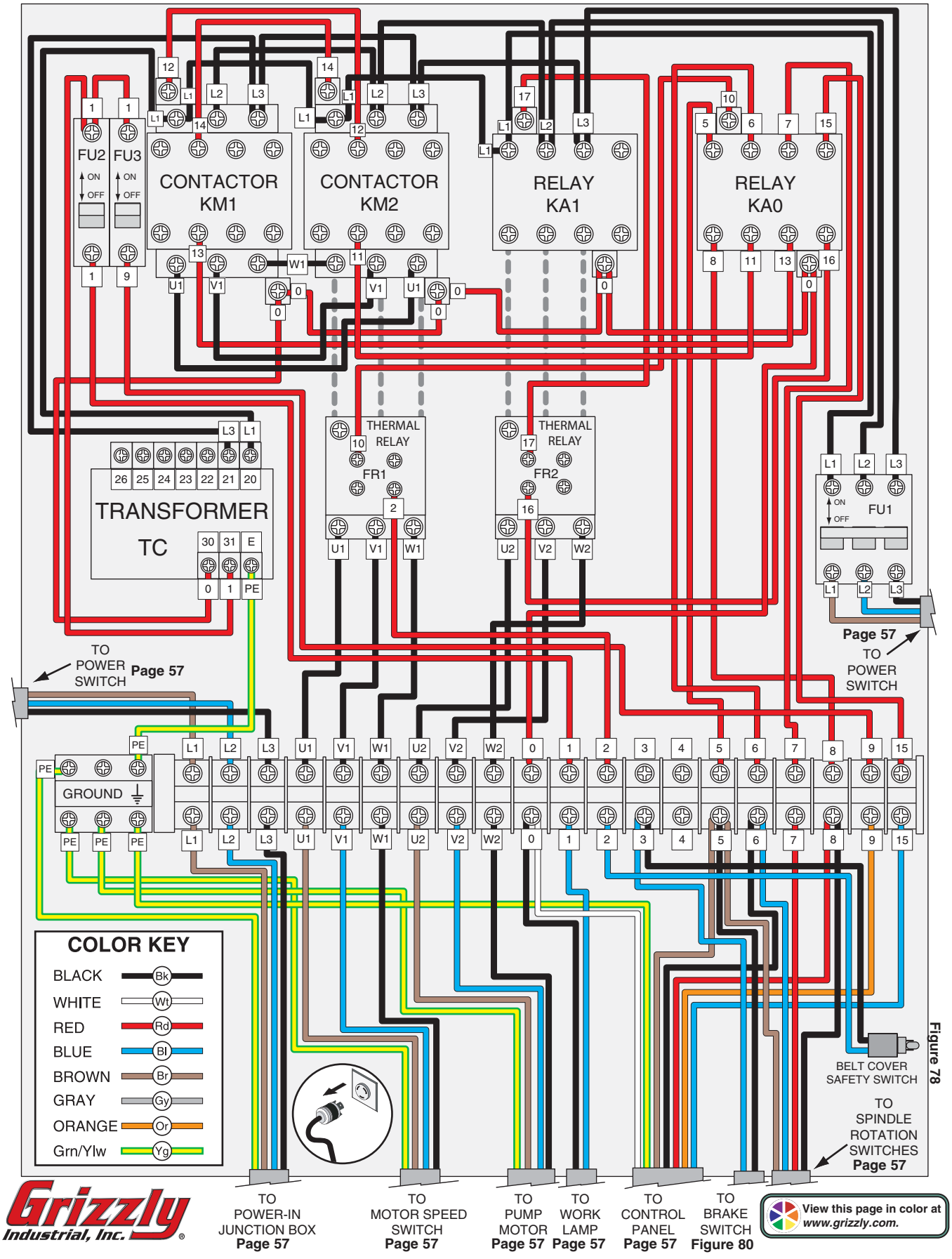
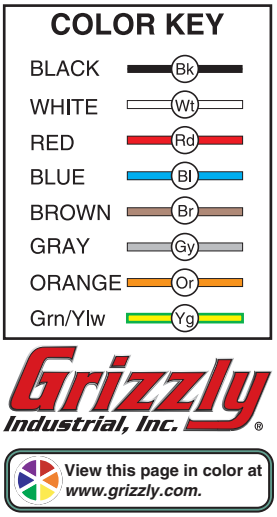
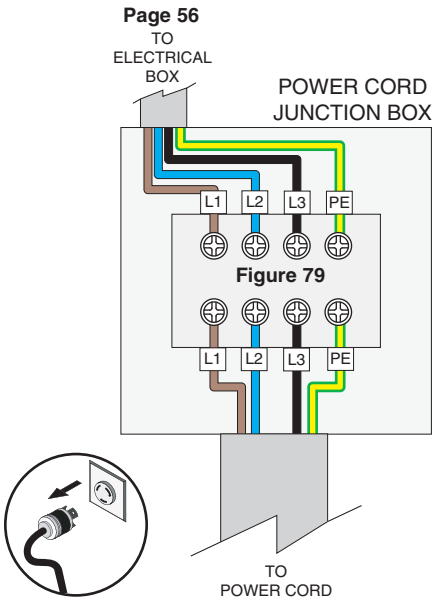


Figure 78

View this page in color at www.grizzly.com.

Component Wiring Diagram





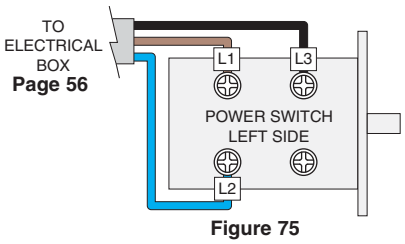


Figure 75

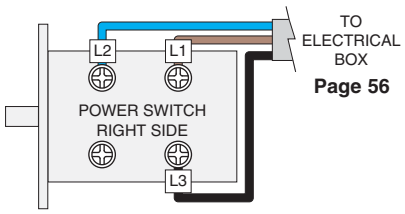


Figure 75

Figure 76

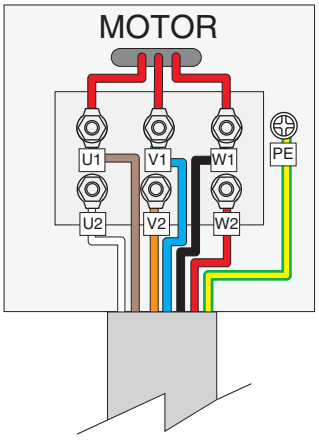
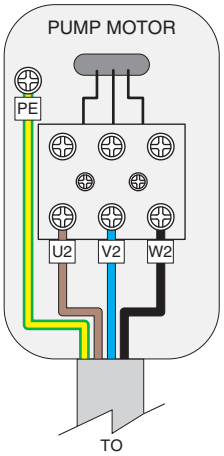


Figure 77



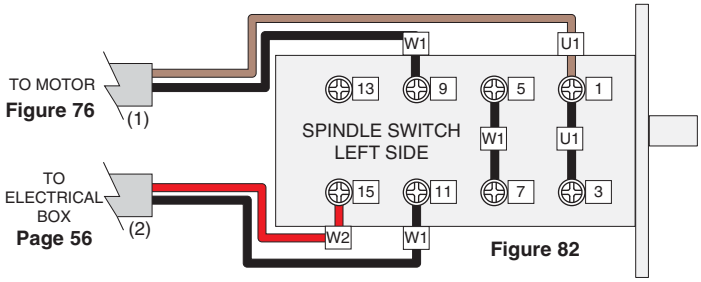
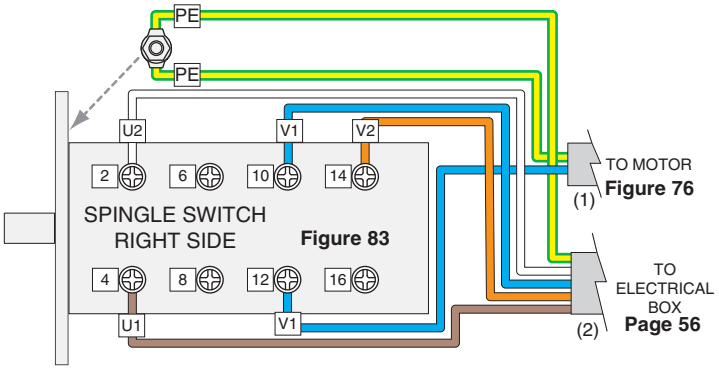
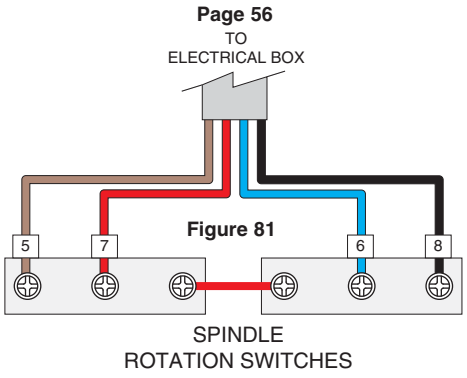


Figure 82





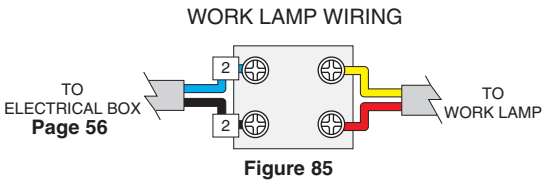
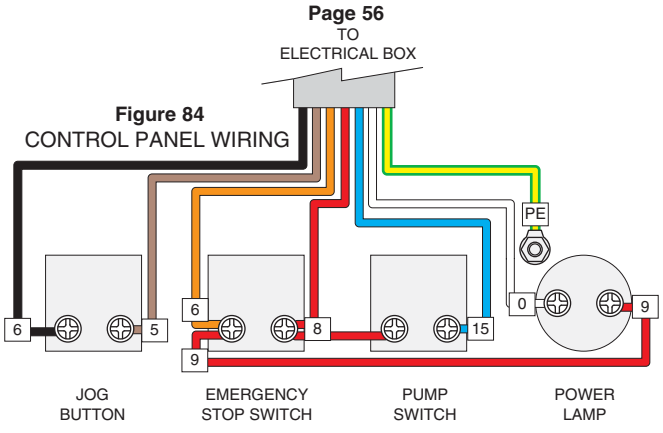
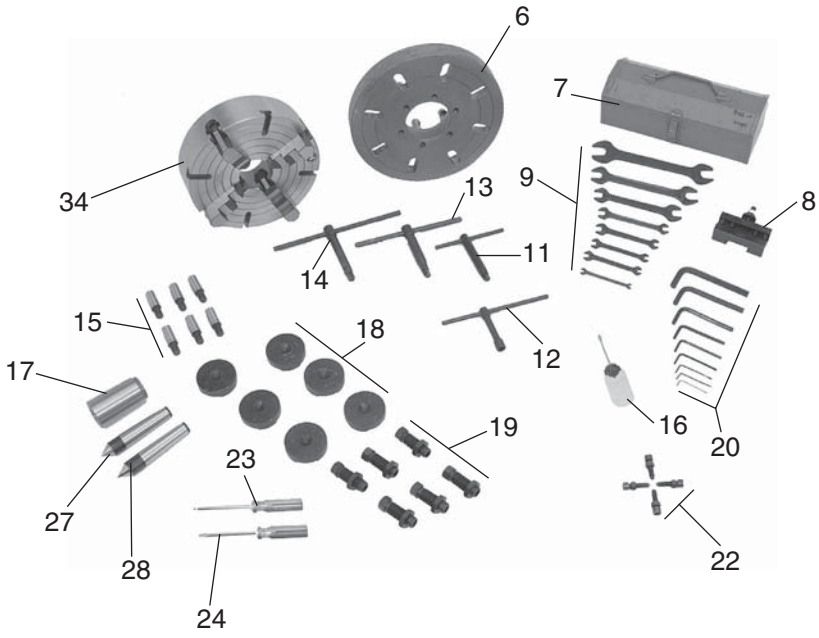


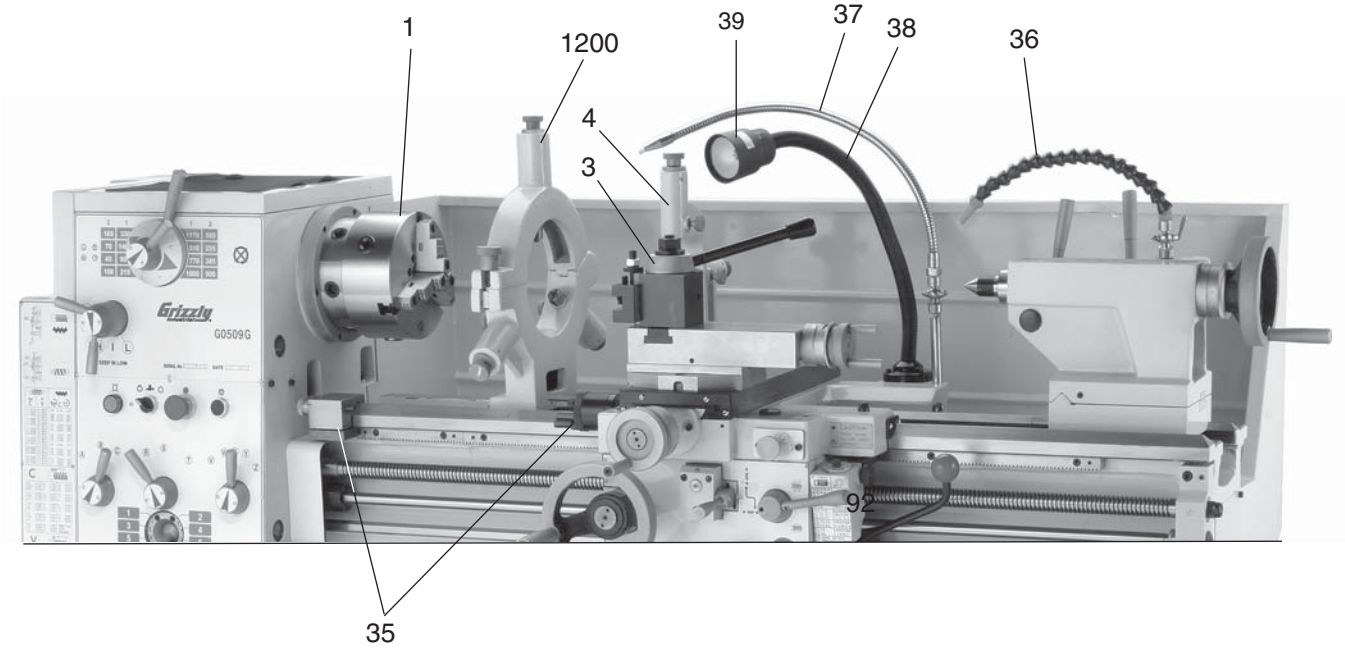
Figure 85



SECTION 8: PARTS

Accessories



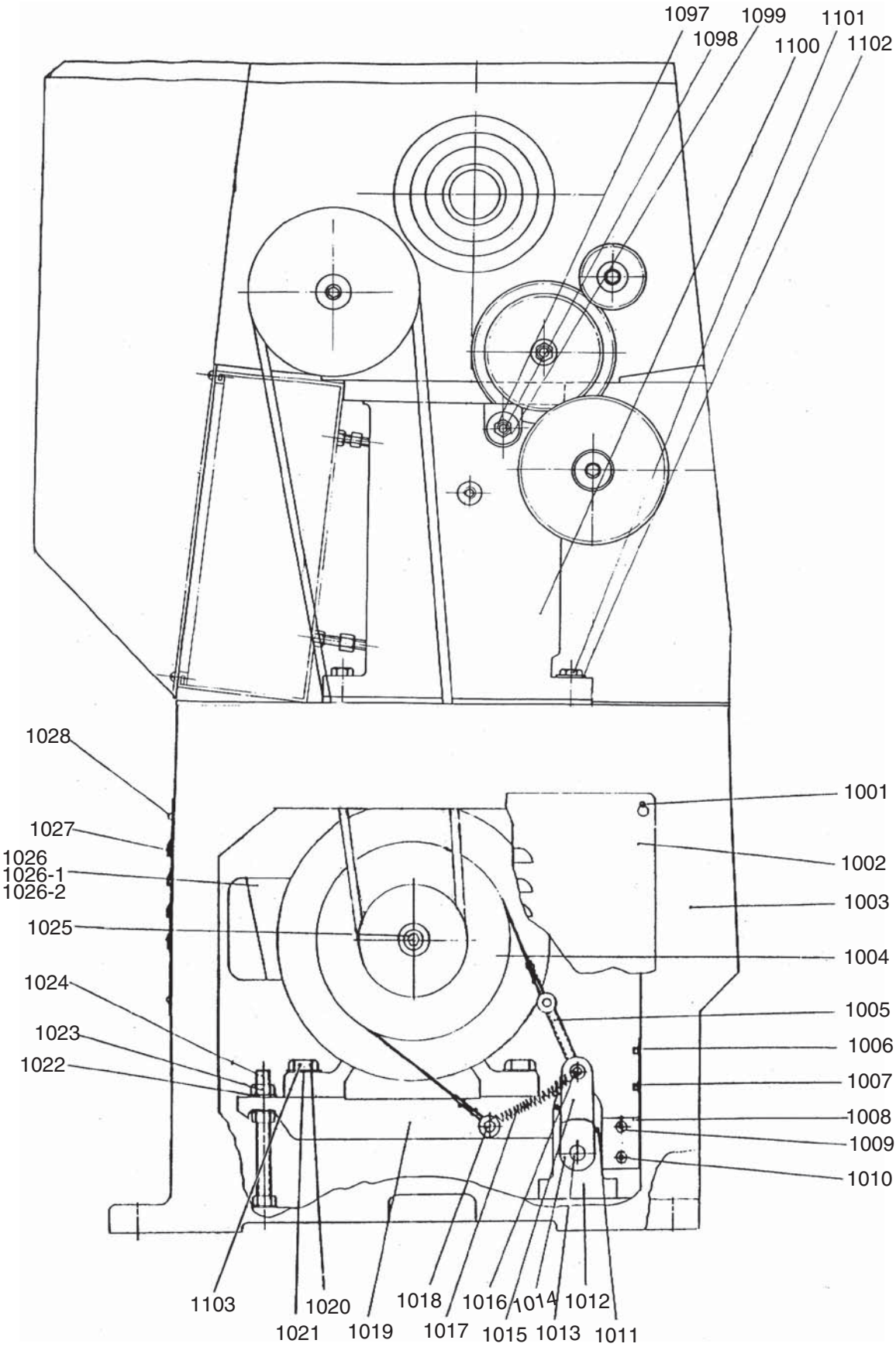


Accessories Parts List

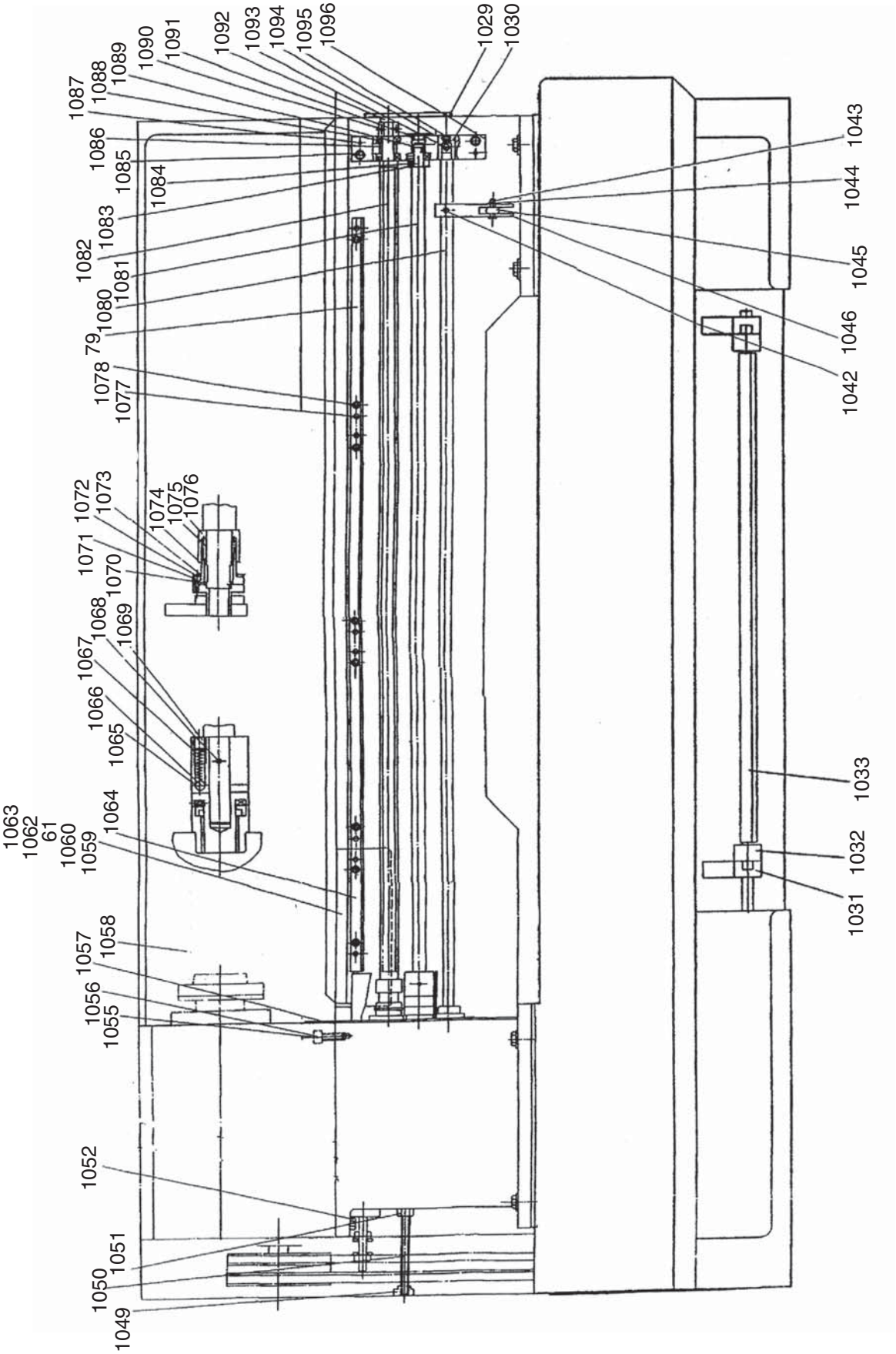
REF	PART #	DESCRIPTION
1	P05090001	8" THREE-JAW CHUCK (G0509)
	P0509G0001	8" THREE-JAW CHUCK (G0509G)
3	P05090003	TOOL POST W/TOOL HOLDER
4	P05090004	COMPLETE FOLLOW REST
6	P05090006	14" FACEPLATE
7	P05090007	TOOL BOX
8	P05090008	TOOL HOLDER
9	P05090009	WRENCH SET
11	P05090011	CAM LOCK T-WRENCH
12	P05090012	TOOL HOLDER T-WRENCH
13	P05090013	4-JAW CHUCK T-WRENCH
14	P05090014	3-JAW CHUCK T-WRENCH
15	P05090015	4-JAW CHUCK CAMLOCK STUDS
16	P05090016	OIL BOTTLE
17	P05090017	MT#6 TO MT#4 ADAPTER

REF	PART #	DESCRIPTION
18	P05090018	CAST-IRON FEET
19	P05090019	JACKING STUDS W/NUTS
20	P05090020	HEX WRENCH SET
22	P05090022	SPIDER SCREWS
23	P05090023	#2 PHILLIPS SCREWDRIVER
24	P05090024	#2 STANDARD SCREWDRIVER
27	P05090027	CARBIDE TIP DEAD CENTER MT#4
28	P05090028	STANDARD TIP DEAD CENTER MT#4
34	P0509034	12" FOUR-JAW UNIVERSAL CHUCK
35	P05090035	MANUAL MICROMITER STOP KIT
36	P0509G8009	TAILSTOCK COOLANT KIT (G0509G)
37	P05090037	CUTTING COOLANT HOSE KIT
38	P05090038	WORK LAMP ASSEMBLY
39	P05090039	LAMP BULB
1200	P05091200	COMPLETE STEADY REST

Frame, Ways, & Stand (1-2)



Frame, Ways, & Stand (2-2)

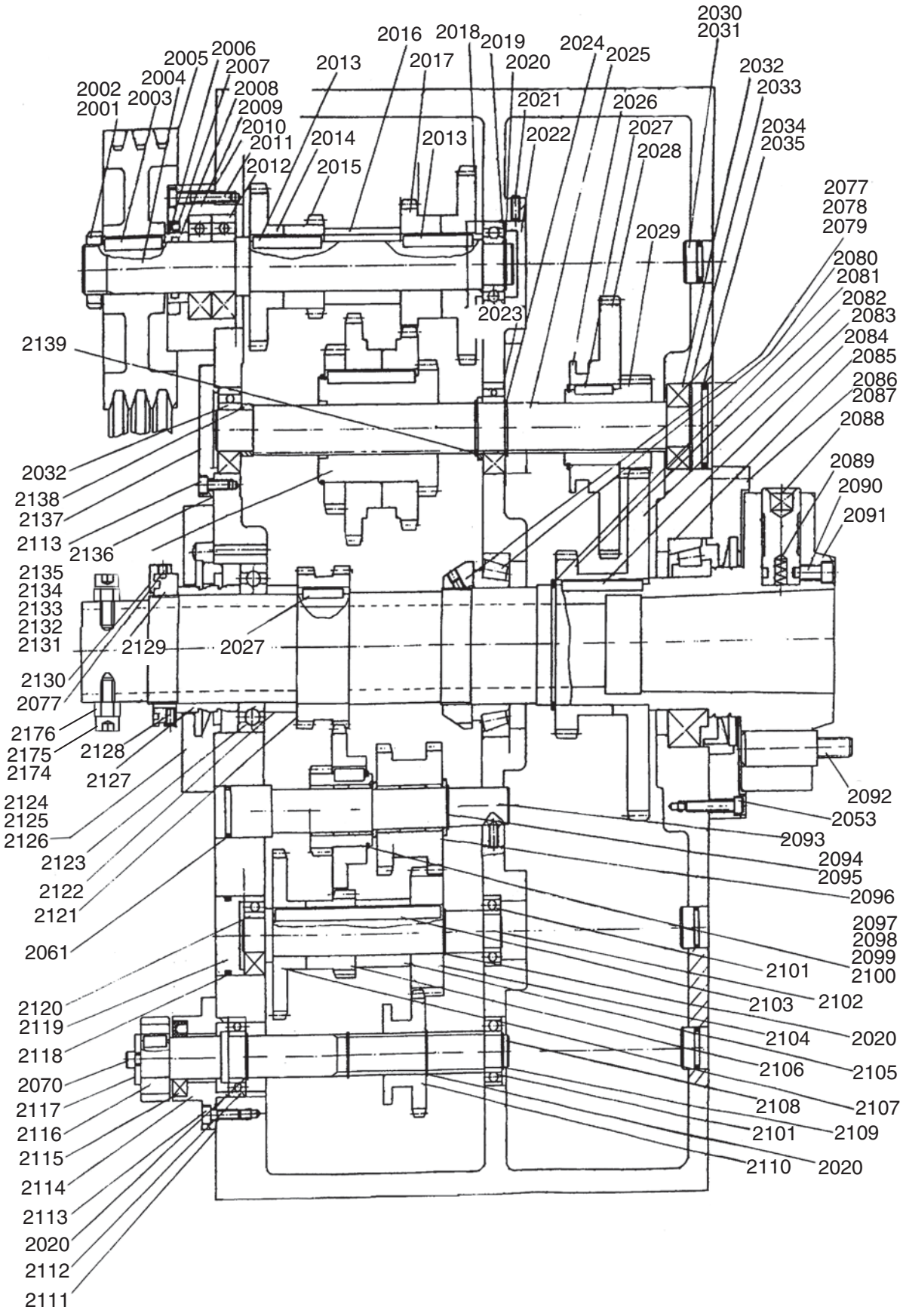


Frame, Ways, & Stand Parts List

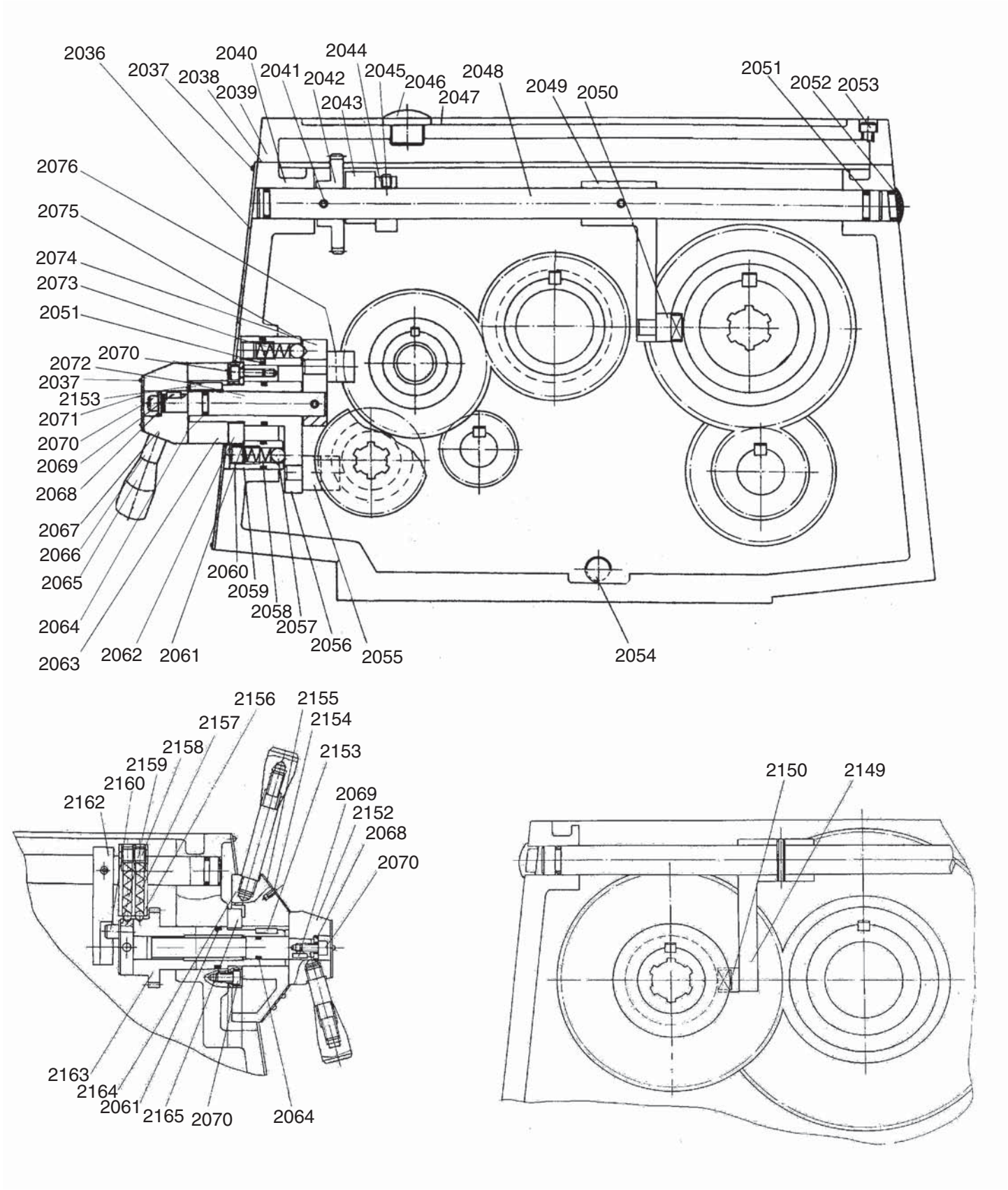
REF	PART #	DESCRIPTION
61	P0509061	TAPER PIN 8 X 85MM
79	P0509079	RACK
1001	PS68M	PHLP HD SCR M6-1 X 10
1002	P05091002	COVER (G0509)
	P0509G1002	COVER (G0509G)
1003	P05091003	STAND
1004	P05091004	PULLEY
1005	P05091005	BELT BRAKE
1006	PS68M	PHLP HD SCR M6-1 X 10
1007	PS68M	PHLP HD SCR M6-1 X 10
1008	P05091008	SWITCH SEAT
1009	PN04M	HEX NUT M4-.7
1010	PSB21M	CAP SCREW M4-.7 X 30
1011	P05091011	LIMIT SWITCH
1012	P05091012	MOTOR SEAT BRACKET
1013	P05091013	SHAFT
1014	P05091014	CAM
1015	P05091015	BRAKE ARM
1016	P05091016	SHAFT
1017	P05091017	SPRING
1018	P05091018	SHAFT
1019	P05091019	MOTOR SEAT
1020	PB31M	HEX BOLT M10-1.5 X 40
1021	PLW06M	LOCK WASHER 10MM
1022	PLW10M	LOCK WASHER 16MM
1023	PN13M	HEX NUT M16-2
1024	P05091024	THREADED STUD M16-2 X 150
1025	P05091025	SPECIAL WASHER
1026	P05091026	MOTOR
1026-1	P05091026-1	MOTOR FAN COVER
1026-2	P05091026-2	MOTOR FAN
1027	P05091027	COVER (G0509)
	P0509G1027	COVER (G0509G)
1028	PSB04M	CAP SCREW M6-1 X 10
1029	P05091029	COVER
1030	P05091030	SLEEVE
1031	P05091031	BRACKET
1032	P05091032	ARM
1033	P05091033	BRAKE PEDAL
1042	PSB52M	CAP SCREW M8-1.25 X 10
1043	P05091043	CLEVIS PIN 7.5 X 25MM
1044	PEC09M	E-CLIP 6MM
1045	P05091045	ROD
1046	P05091046	LEVER
1049	P05091049	KNURLED THUMB NUT
1050	P05091050	MOUNTING STUD
1051	PN02M	HEX NUT M10-1.5
1052	PB35M	HEX BOLT M12-1.75 X 40

REF	PART #	DESCRIPTION
1055	PSB92M	CAP SCREW M12-1.75 X 40
1056	P05091056	DOWEL PIN 12 X 30MM
1057	P05091057	COVER
1058	P05091058	GUARD ASSEMBLY
1059	P05091059	GAP BLOCK
1060	PSB70M	CAP SCREW M10-1.5 X 45
1062	PN03M	HEX NUT M8-1.25
1063	PSB05M	CAP SCREW M8-1.25 X 50
1064	P05091064	RACK
1065	P05091065	CLUTCH
1066	P05091066	STEEL BALL 8MM
1067	P05091067	TAPER PIN 5 X 45MM
1068	P05091068	COMPRESSION SPRING 1.2 X 6 X 46MM
1069	P05091069	SPECIAL SCR M10-1.5 X 10
1070	P05091070	SLEEVE
1071	P05091071	DOWEL PIN
1072	P05091072	THRUST WASHER
1073	PR19M	EXT RETAINING RING 28MM
1074	PK08M	KEY 5 X 5 X 16MM
1075	P05091075	COMPRESSION SPRING 1.8 X 2.5 X 55
1076	P05091076	COVER
1077	PSB07M	CAP SCREW M6-1 X 30
1078	PRP08M	ROLL PIN 6 X 30MM
1080	P05091080	ROD
1081	P05091081	FEED ROD
1082	P05091082	LEAD SCREW
1083	P05091083	SLEEVE
1084	PSS02M	SET SCREW M6-1 X 6
1085	PSB40M	CAP SCREW M8-1.25 X 35
1086	P05091086	SLEEVE
1087	P05091087	TAPER PIN 6 X 50MM
1088	P8203	THRUST BEARING 8203
1089	P05091089	SLEEVE
1090	PSS03M	SET SCREW M6-1 X 8
1091	P05091091	PLUG
1092	P05091092	END PLAY ADJUSTMENT NUT
1093	P05091093	STEEL BALL 9.5MM
1094	P05091094	COMPRESSION SPRING 1 X 9 X 20MM
1095	PSB68M	CAP SCREW M6-1 X 8
1096	P05091096	BRACKET
1097	P05091097	STUD M12-1.75 X 100
1098	PN09M	HEX NUT M12-1.75
1099	PW06M	FLAT WASHER 12MM
1100	P05091100	BED
1101	PB24M	HEX BOLT M12-1.75 X 45
1102	PLW05M	LOCK WASHER 12MM
1103	P0509G1103	BUFFER BUMPER

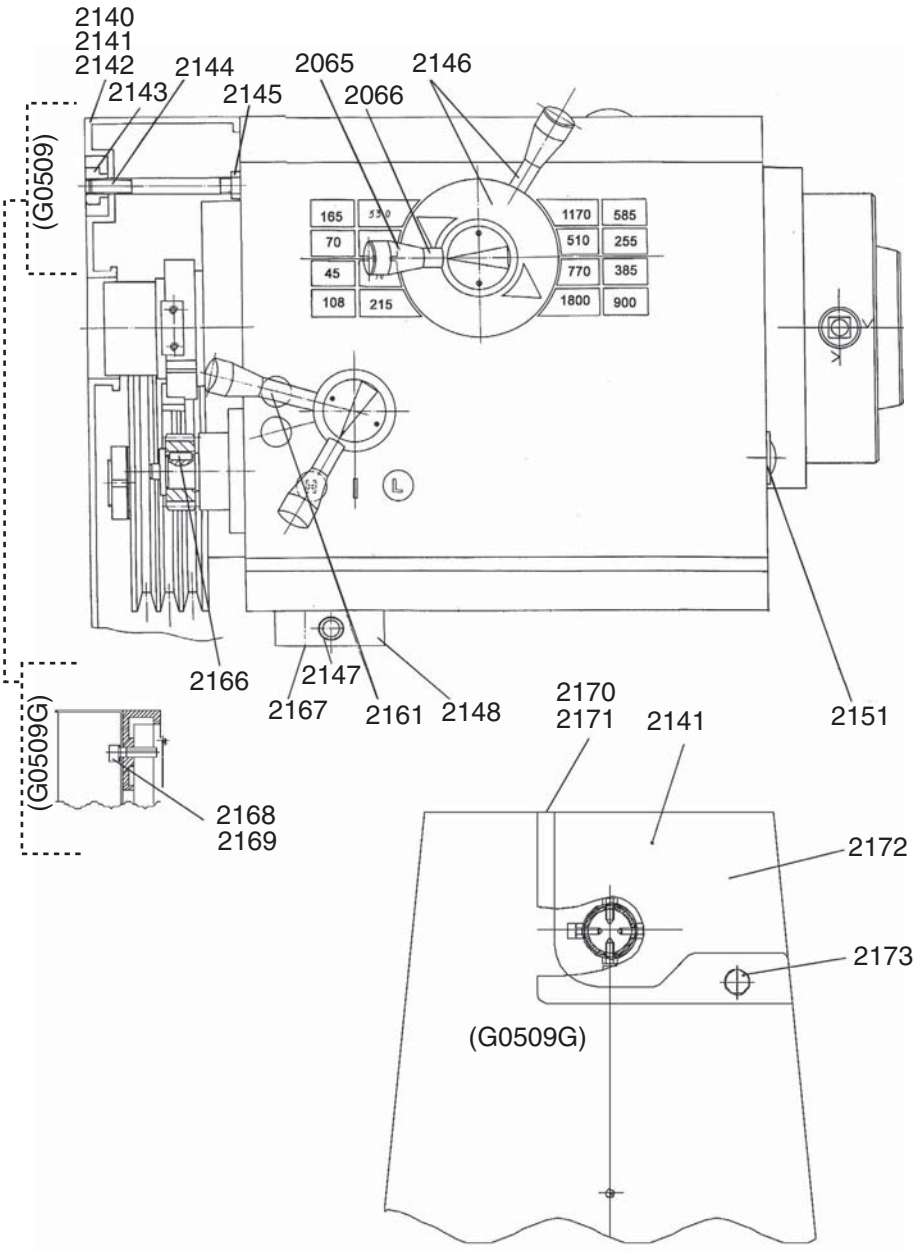
Headstock (1-3)



Headstock (2-3)



Headstock (3-3)



Headstock Parts List

REF	PART #	DESCRIPTION
2001	P05092001	HEX NUT M30-1.5
2002	P05092002	TOOTHED LOCK WASHER 30MM
2003	PK41M	KEY 8 X 8 X 40MM
2004	P05092004	SHAFT
2005	P05092005	PULLEY
2006	P05092006	SPACER
2007	P05092007	OIL SEAL
2008	P05092008	O-RING 36 X 3.5MM
2009	P05092009	BEARING COVER
2010	P05092010	PACKING
2011	PSB29M	CAP SCREW M6-1 X 40
2012	P6206ZZ	BALL BEARING 6206
2013	P05092013	KEY 8 X 8 X 50MM
2014	P05092014	GEAR 38-TOOTH
2015	P05092015	GEAR 33-TOOTH
2016	P05092016	SLEEVE
2017	P05092017	GEAR 23-TOOTH
2018	P05092018	GEAR 33-TOOTH
2019	P6205ZZ	BALL BEARING 6205ZZ
2020	PR11M	EXT RETAINING RING 25MM
2021	PSS34M	SET SCREW M5-.8 X 16
2022	P05092022	PLUG
2023	P05092023	BALL BEARING E206 (G0509)
2024	PR15M	EXT RETAINING RING 30MM
2025	P05092025	SHAFT
2026	PR56M	EXT RETAINING RING 45MM
2027	PK136M	KEY 8 X 8 X 30MM
2028	P05092028	GEAR 60-TOOTH
2029	P05092029	GEAR 21-TOOTH
2030	P05092030	PLUG
2031	P05092031	O-RING 19 X 2.65MM
2032	P6305ZZ	BALL BEARING 6305ZZ
2033	P05092033	EXT RETAINING RING 62MM
2034	P05092034	COVER
2035	P05092035	O-RING 56 X 3.5MM
2036	P05092036	PLATE
2037	P05092037	FLAT HD SCR M3-.5 X 15
2038	P05092038	PACKING
2039	P05092039	COVER
2040	P05092040	CASTING
2041	PRP05M	ROLL PIN 5 X 30MM
2042	P05092042	GEAR 43-TOOTH
2043	P05092043	BRACKET
2044	P05092044	SLEEVE
2045	PSS01M	SET SCREW M6-1 X 10
2046	P05092046	PLUG
2047	P05092047	COVER

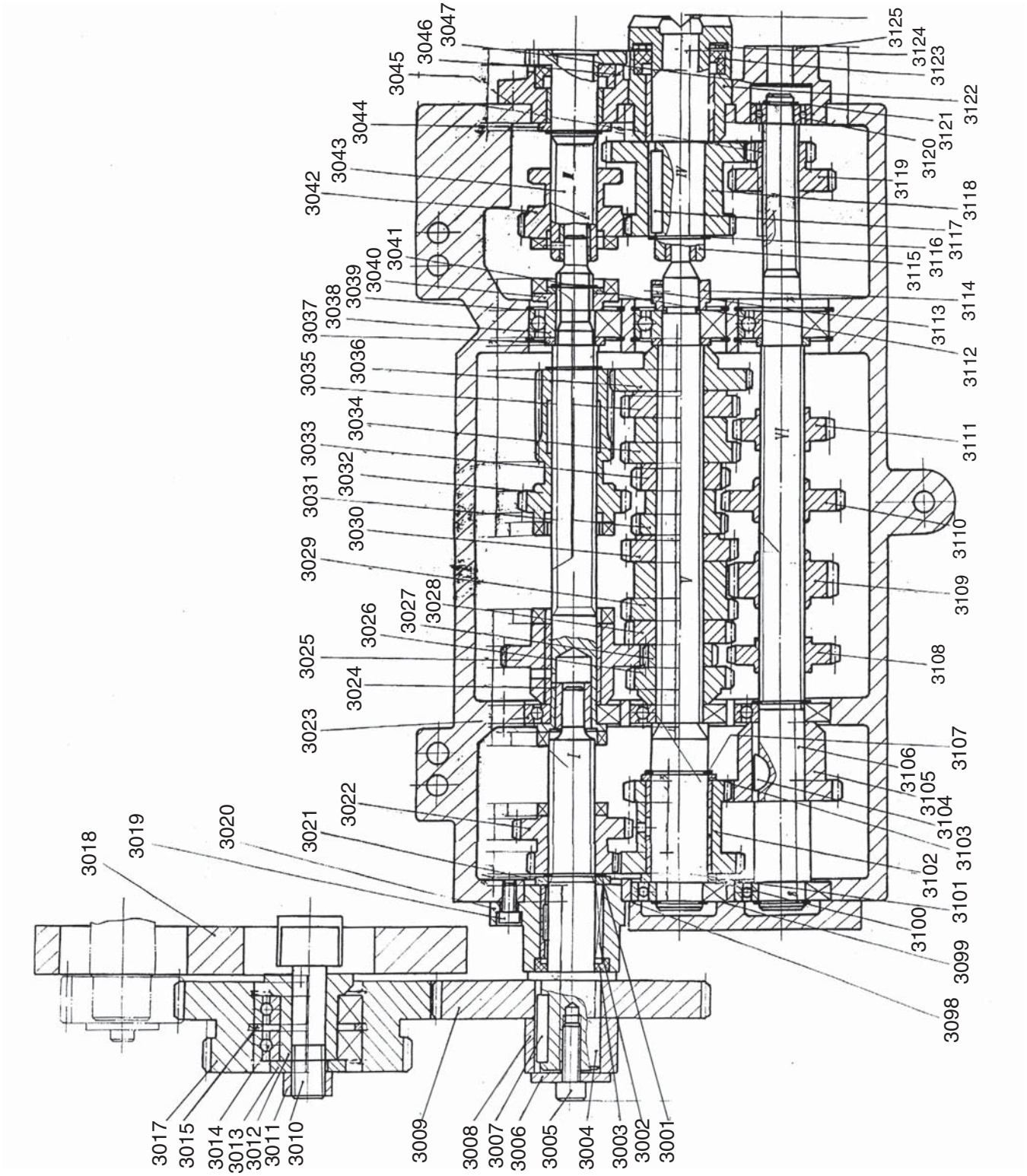
REF	PART #	DESCRIPTION
2048	P05092048	SHAFT
2049	P05092049	LEVER
2050	P05092050	FORK
2051	P05092051	O-RING 14 X 2.65MM
2052	P05092052	PLUG
2053	PSB07M	CAP SCREW M6-1 X 30
2054	P05092054	OIL PLUG
2055	P05092055	FORK
2056	P05092056	LEVER
2057	P05092057	STEEL BALL 10MM
2058	P05092058	COMPRESSION SPRING 0.9 X 9 X 35MM
2059	P05092059	BRACKET
2060	PSS01M	SET SCREW M6-1 X 10
2061	P05092061	O-RING 28 X 3.1MM
2062	P05092062	COVER
2063	P05092063	LEVER HUB
2064	P05092064	O-RING 10 X 2.65MM
2066	P05092066	LEVER
2067	P05092067	LEVER HUB
2068	PR04M	EXT RETAINING RING 6MM
2069	PK05M	KEY 4 X 4 X 10MM
2070	PSB26M	CAP SCREW M6-1 X 12
2071	P05092071	PLATE
2072	P05092072	SHAFT
2073	P05092073	COMPRESSION SPRING 0.9 X 9 X 40MM
2074	P05092074	LEVER
2075	P05092075	BRACKET
2076	P05092076	FORK
2077	PSS03M	SET SCREW M6-1 X 8
2078	P05092078	SPANNER NUT
2079	P05092079	LEAD PLUG
2080	P05092080	TAPERED ROLLER BEARING
2081	P05092081	EXT RETAINING RING 75MM
2082	P05092082	GEAR 43-TOOTH
2083	P05092083	GEAR 82-TOOTH
2084	P05092084	KEY 8 X 8 X 60MM
2085	P05092085	TAPERED ROLLER BEARING
2086	P05092086	COVER
2087	P05092087	PACKING
2088	P05092088	CAM LOCK
2089	P05092089	COMPRESSION SPRING
2090	P05092090	SPECIAL CAP SCREW
2091	P05092091	SPINDLE D1-6 (G0509)
	P0509G2091	SPINDLE D1-6 (G0509G)
2092	P05092092	CAM LOCK STUD
2093	P05092093	SHAFT
2094	P05092094	SPACER

Headstock Parts List

REF	PART #	DESCRIPTION
2095	PR10M	EXT RETAINING RING 22MM
2096	P05092096	GEAR 36-TOOTH
2097	P05092097	GEAR 24-TOOTH
2098	P05092098	GEAR 48-TOOTH
2099	PK34M	KEY 5 X 5 X 20MM
2100	PR62M	EXT RETAINING RING 42MM
2101	P6204-2RS	BALL BEARING 6204
2102	P05092102	SHAFT
2103	P05092103	KEY 8 X 8 X 115MM
2104	P05092104	GEAR 26-TOOTH
2105	P05092105	SLEEVE
2106	P05092106	GEAR 24-TOOTH
2107	P05092107	GEAR 48-TOOTH
2108	P05092108	SHAFT
2109	PR09M	EXT RETAINING RING 20MM
2110	P05092110	GEAR 36-TOOTH
2111	P05092111	PACKING
2112	P60052RS	BALL BEARING 6005
2113	PSB27M	CAP SCREW M6-1 X 14
2114	P05092114	COVER
2115	P05092115	OIL SEAL
2116	P05092116	CHANGE GEAR 24-TOOTH
2117	P05092117	SPACER
2118	P05092118	O-RING 46 X 3.5MM
2119	P05092119	COVER
2120	P6204-2RS	BALL BEARING 6204
2121	P05092121	GEAR 48-TOOTH
2122	P05092122	SLEEVE
2123	P05092123	BALL BEARING E213
2124	P05092124	COVER
2125	P05092125	PACKING
2126	PSB06M	CAP SCREW M6-1 X 25
2127	P05092127	OIL RING
2128	PSS01M	SET SCREW M6-1 X 10
2129	P05092129	SPANNER NUT
2130	P05092130	COUNTERWEIGHT
2131	P05092131	GEAR 39-TOOTH
2132	P05092132	GEAR 54-TOOTH
2133	P05092133	GEAR 47-TOOTH
2134	P05092134	GEAR 31-TOOTH
2135	PR13M	EXT RETAINING RING 65MM
2136	P05092136	PACKING

REF	PART #	DESCRIPTION
2137	P05092137	COVER
2138	P05092138	SPACER
2139	P05092139	SPACER
2140	P05092140	PLATE
2141	P05092141	COVER (G0509)
	P0509G2141	COVER (G0509G)
2142	PS79M	PHLP HD SCR M3-.5 X 8
2143	P05092143	KNURLED NUT M10-1.5
2144	P05092144	STUD M10-1.5 X 85
2145	PN02M	HEX NUT M10-1.5
2146	P05092146	LEVER W/HUB ASSEMBLY
2147	P05092147	SPECIAL SCR M12-1.75 X 20
2148	P05092148	BRACKET
2149	P05092149	BRACKET
2150	P05092150	FORK
2151	P05092151	SIGHT GLASS 16MM
2152	P05092152	LEVER BRACKET
2153	PK14M	KEY 5 X 5 X 18MM
2154	P05092154	RIVET 2 X 5MM
2155	P05092155	PLATE
2156	P05092156	STEEL BALL 6.5MM
2157	P05092157	COMPRESSION SPRING 1 X 5 X 22MM
2158	PSS14M	SET SCREW M8-1.25 X 12
2159	P05092159	LEVER SHAFT
2160	P05092160	DOWEL PIN
2161	P05092161	LEVER
2162	P05092162	BRACKET
2163	P05092163	GEAR SHAFT 37-TOOTH
2164	P05092164	LEVER BRACKET
2165	P05092165	COVER
2166	PK101M	KEY 6 X 6 X 14MM
2167	P05092167	SPECIAL ADJUSTING SCREW
2168	PSB143M	CAP SCREW M10-1.5 X 50 (G0509G)
2169	PW04M	FLAT WASHER 10MM (G0509G)
2170	P0509G2170	HINGE (G0509G)
2171	PSB110M	CAP SCREW M4-.7 X 6 (G0509G)
2172	P0509G2172	COVER (G0509G)
2173	PSB31M	CAP SCREW M8-1.25 X 25 (G0509G)
2174	P0509G2174	SPIDER BOLT 3/8-18 X 1-1/2" (G0509G)
2175	P0509G2175	SPIDER BOLT 3/8-24 X 1/2" (G0509G)
2176	PN11	HEX NUT 3/8-24 (G0509G)

Gearbox (1-3)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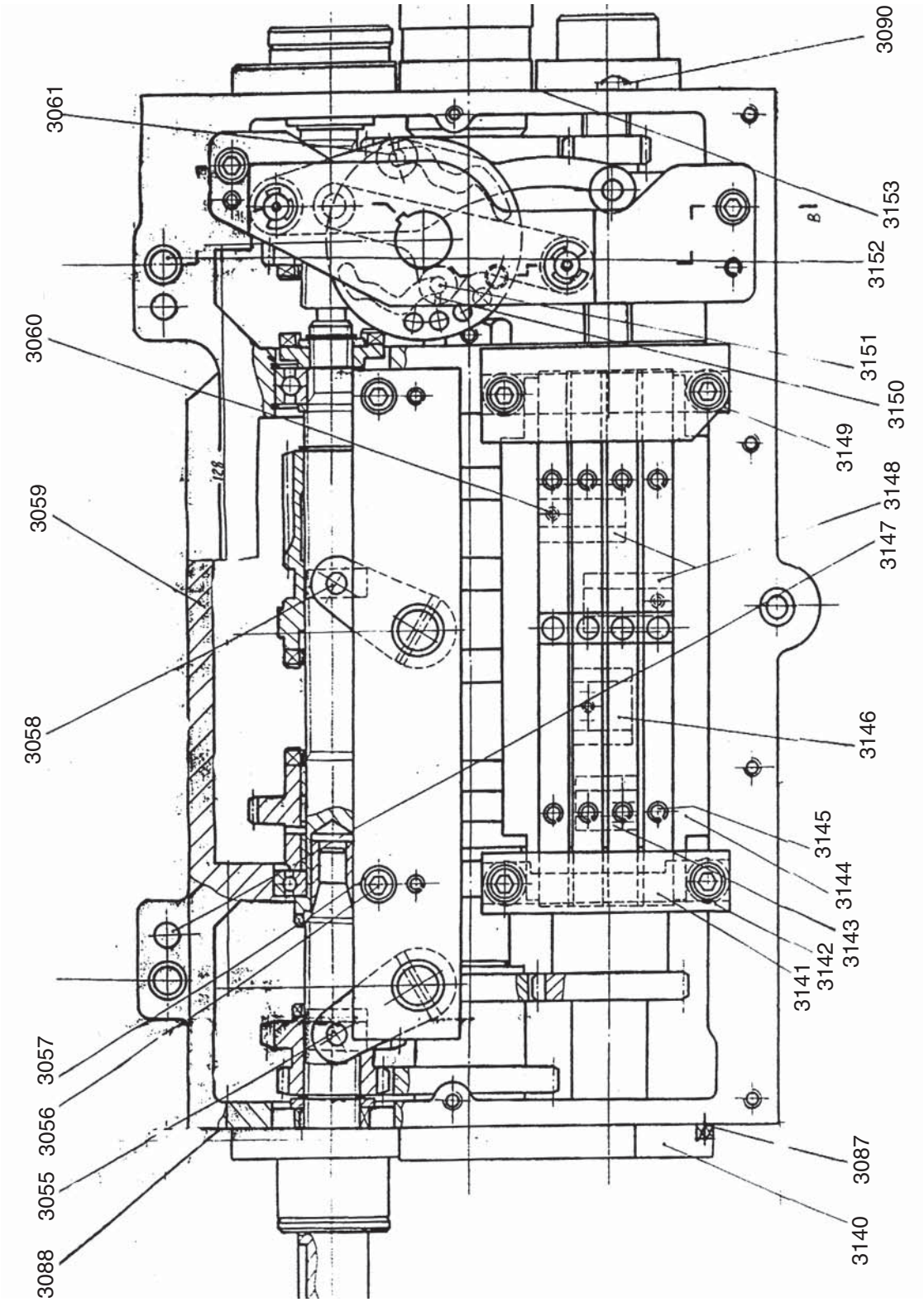
Gearbox (2-3)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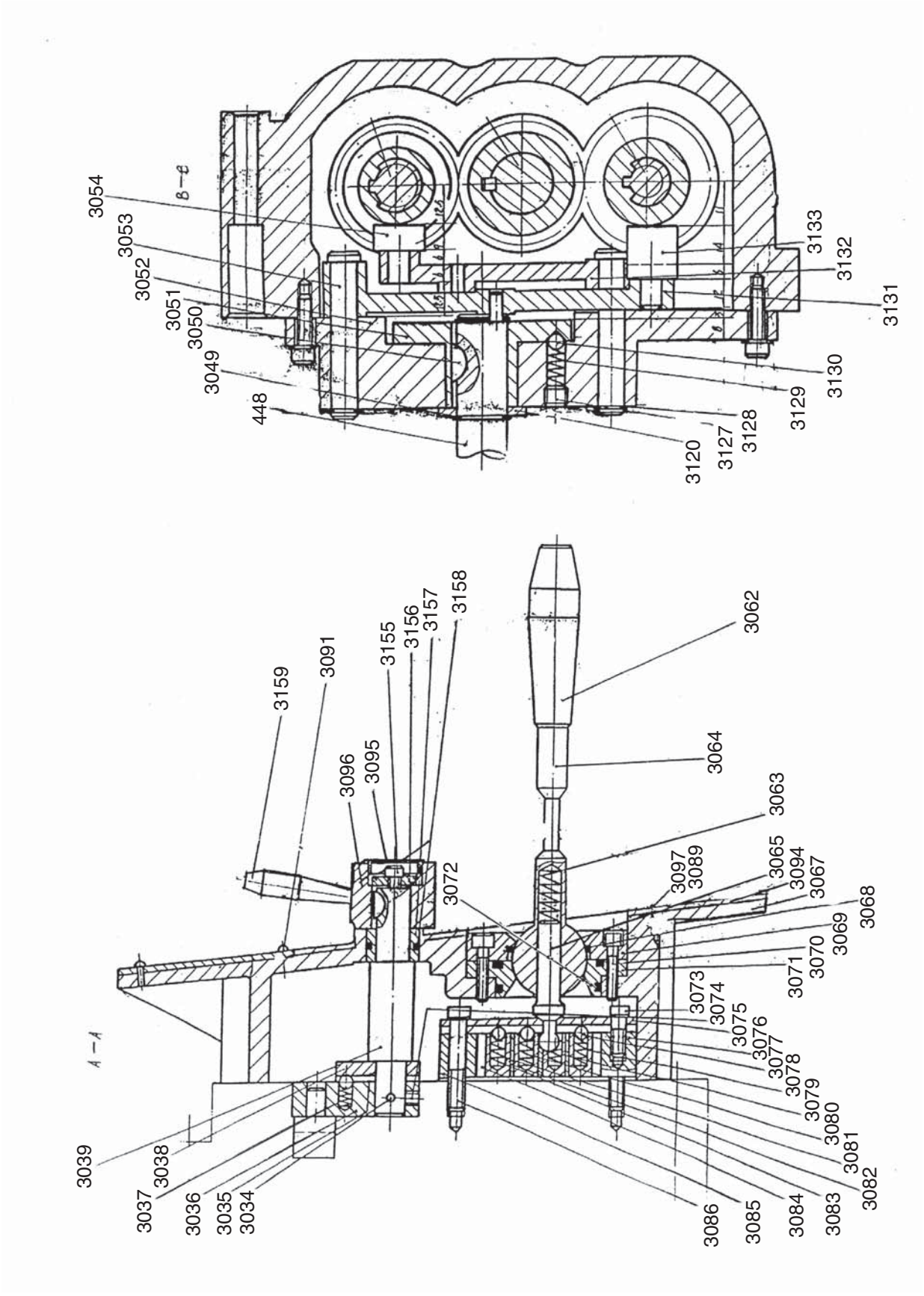
Gearbox (3-3)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Gearbox Parts List

REF	PART #	DESCRIPTION
448	P05090448	LEVER
3001	PEC06M	E-CLIP 20MM
3002	P05093002	ROLLER BEARING 943/20
3003	P05093003	OIL SEAL
3004	P05093004	SHAFT
3005	PSB11M	CAP SCREW M8-1.25 X 16
3006	P05093006	WIDE WASHER
3007	P05093007	KEY 8 X 8 X 28MM
3008	P05093008	SLEEVE
3009	P05093009	CHANGE GEAR 57-TOOTH
3010	P05093010	SHAFT
3011	PN32M	HEX NUT M14-2
3012	P05093012	SLEEVE
3013	P05093013	WIDE WASHER 14MM
3014	P05093014	ROLLER BEARING 160105
3015	PR25M	INT RETAINING RING 47MM
3017	P05093017	CHANGE GEAR 44/52-TOOTH
3018	P05093018	BELLCRANK SWING ARM
3019	PSB01M	CAP SCREW M6-1 X 16
3020	P05093020	BRACKET
3021	P05093021	THRUST WASHER
3022	P05093022	GEAR 39/20-TOOTH
3023	P05093023	BALL BEARING 7000104
3024	P05093024	SHAFT
3025	P05093025	GEAR 38-TOOTH
3026	P05093026	GEAR 22-TOOTH
3027	P05093027	GEAR 19-TOOTH
3028	P05093028	GEAR 20-TOOTH
3029	P05093029	GEAR 24-TOOTH
3030	P05093030	GEAR 23-TOOTH
3031	P05093031	GEAR 27-TOOTH
3032	P05093032	GEAR 23/19-TOOTH
3033	P05093033	GEAR 24-TOOTH
3034	P05093034	GEAR 28-TOOTH
3035	P05093035	GEAR 26-TOOTH
3036	P05093036	GEAR 38-TOOTH
3037	P05093037	THRUST WASHER
3038	P203	BALL BEARING 203
3039	PR23M	INT RETAINING RING 40MM
3040	P05093040	CLUTCH
3041	PR02M	EXT RETAINING RING 14MM
3042	P05093042	CLUTCH GEAR
3043	P05093043	SHAFT
3044	P05093044	THRUST WASHER
3045	P05093045	PACKING
3046	P05093046	COVER
3047	P05093047	THRUST WASHER
3049	PR18M	EXT RETAINING RING 17MM
3050	P05093050	KEY 3 X 3 X 12MM
3051	P05093051	CAM
3052	P05093052	BRACKET
3053	P05093053	SHAFT

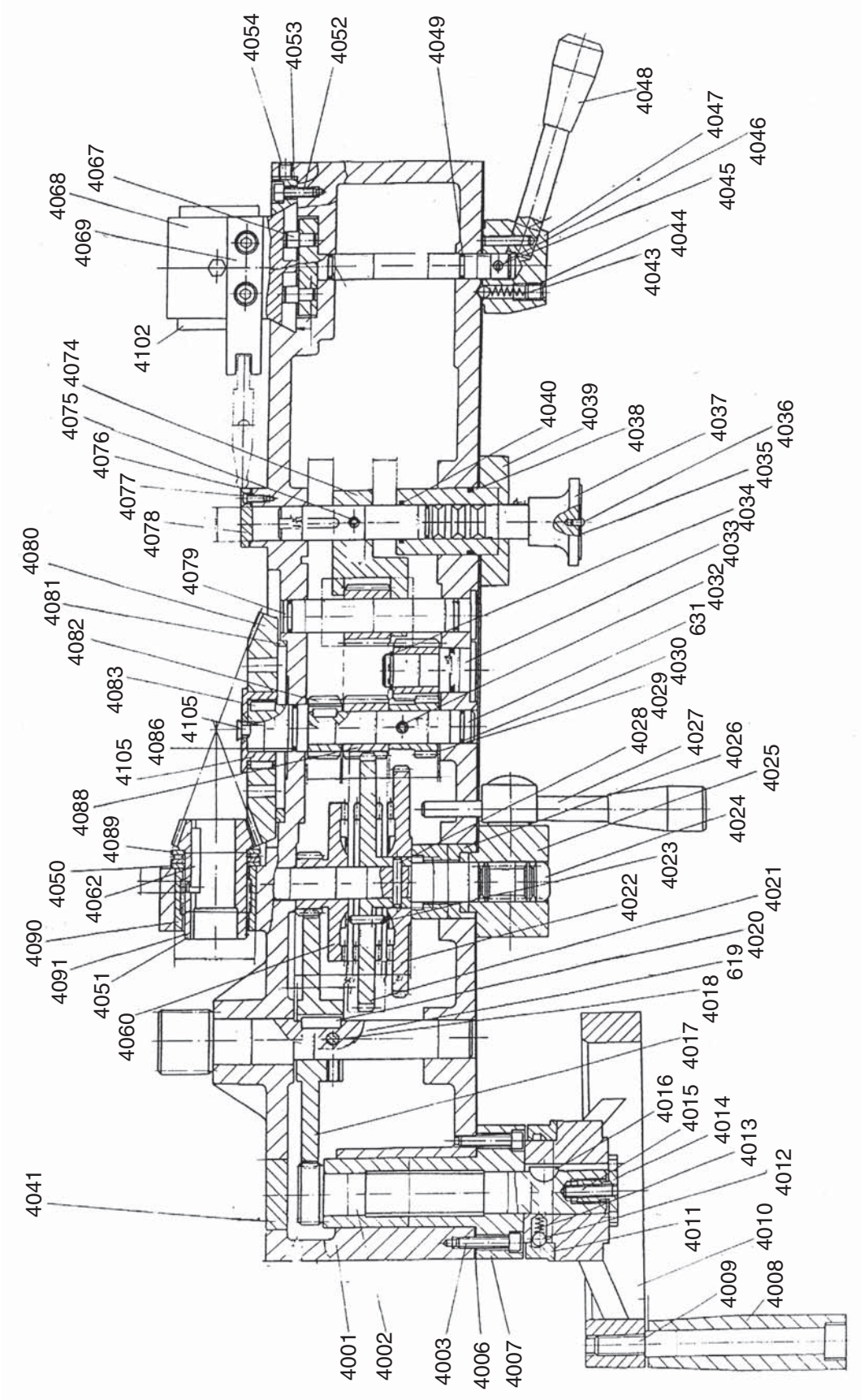
REF	PART #	DESCRIPTION
3054	P05093054	FORK
3055	P05093055	FORK
3056	PSB01M	CAP SCREW M6-1 X 16
3057	PLW03M	LOCK WASHER 6MM
3058	P05093058	FORK
3059	P05093059	CASTING
3060	PSB15M	CAP SCREW M5-.8 X 20
3061	P05093061	FORK
3062	P05093062	LEVER
3063	P05093063	COMPRESSION SPRING 1 X 8 X 32
3064	P05093064	LEVER
3065	P05093065	SELECTOR
3067	P05093067	COVER
3068	P05093068	O-RING 30 X 2.65MM
3069	P05093069	COVER
3070	PSB38M	CAP SCREW M5-.8 X 25
3071	P05093071	BRACKET
3072	P05093072	O-RING 38.7 X 2.65MM
3073	PSB01M	CAP SCREW M6-1 X 16
3074	P05093074	BRACKET
3075	PSS02M	SET SCREW M6-1 X 6
3076	P05093076	CAP SCREW
3077	P05093077	STEEL BALL 6MM
3078	P05093078	FORK
3079	P05093079	FORK
3080	P05093080	FORK
3081	P05093081	FORK
3082	P05093082	DRIVE PLATE
3083	P05093083	COMPRESSION SPRING .8 X 5 X 17
3084	P05093084	TOP PLATE
3085	P05093085	SLEEVE
3086	PSB48M	CAP SCREW M6-1 X 35
3087	P05093087	PLUG
3088	P05093088	OIL INLET PIPE
3089	PSB127M	CAP SCREW M6-1 X 65
3090	P05093090	SIGHT GLASS 20MM
3091	PS05M	PHLP HD SCR M5-.8 X 8
3094	P05093094	PLATE
3095	P05093095	PLATE
3096	P05093096	LEVER
3097	PSB42M	CAP SCREW M6-1 X 85
3098	P05093098	PACKING
3099	P05093099	PACKING
3100	P05093100	THRUST WASHER
3101	P05093101	SHAFT
3102	P05093102	GEAR 30/19-TOOTH
3103	P05093103	THRUST WASHER
3104	PK08M	KEY 5 X 5 X 16MM
3105	P05093105	GEAR 22-TOOTH
3106	P05093106	SHAFT
3107	PR11M	EXT RETAINING RING 25MM

Gearbox Parts List

REF	PART #	DESCRIPTION
3108	P05093108	GEAR 22-TOOTH
3109	P05093109	GEAR 22-TOOTH
3110	P05093110	GEAR 33-TOOTH
3111	P05093111	GEAR 22-TOOTH
3112	P05093112	THRUST WASHER
3113	P05093113	SPECIAL NUT
3114	PSS07M	SET SCREW M5-.8 X 5
3115	P05093115	SHAFT
3116	PR10M	EXT RETAINING RING 22MM
3117	PK15M	KEY 5 X 5 X 35MM
3118	P05093118	GEAR 33-TOOTH
3119	P05093119	GEAR 36/20-TOOTH
3120	P05093120	ROLLER BEARING 101
3121	PR03M	EXT RETAINING RING 12MM
3122	P05093122	BRACKET
3123	P05093123	OIL SEAL
3124	P8105	THRUST BEARING 8105
3125	P05093125	BRACKET
3126	P05093126	THRUST WASHER
3127	PSS20M	SET SCREW M8-1.25 X 8
3128	PR39M	EXT RETAINING RING 8MM
3129	P05093083	COMPRESSION SPRING
3130	P05092156	STEEL BALL 6.5MM
3131	P05093131	LEVER
3132	P05093132	LEVER
3133	P05093133	FORK

REF	PART #	DESCRIPTION
3134	PRP56M	ROLL PIN 4 X 25mm
3135	P05093135	PACKING
3136	P05093136	LEVER
3137	P05093083	COMPRESSION SPRING
3138	P05093138	SELECTOR BAR
3139	P05093139	SHAFT
3140	P05093140	COVER
3141	P05093141	PLATE
3142	P05093142	PLATE
3143	P05093143	FORK
3144	PRP70M	ROLL PIN 5 X 18MM
3145	PRP44M	ROLL PIN 3 X 10MM
3146	P05093146	FORK
3147	P05093147	TAPER PIN 8 X 90MM
3148	P05093148	FORK
3149	P05093149	PLATE
3150	PRP37M	ROLL PIN 3 X 14MM
3151	P05093151	FORK
3152	PSB35M	CAP SCREW M8-1.25 X 60
3153	P05093153	PACKING
3154	PS07M	PHLP HD SCR M4-.7 X 8
3155	PSB33M	CAP SCREW M5-.8 X 12
3156	P05093156	WASHER
3157	P05093157	SLEEVE
3158	P05093158	O-RING 16 X 2.65MM
3159	P05093159	LEVER

Apron (1-2)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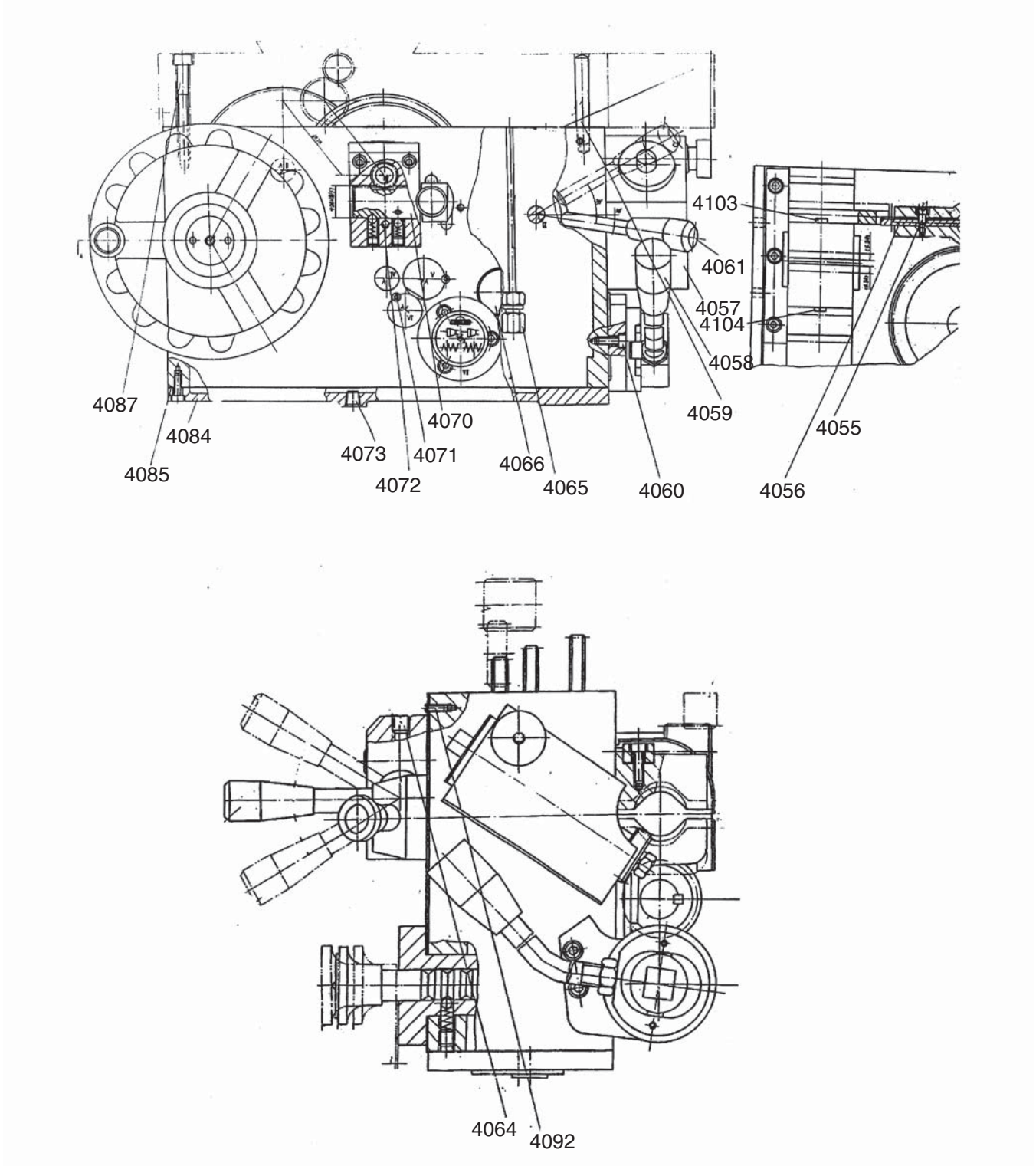
Apron (2-2)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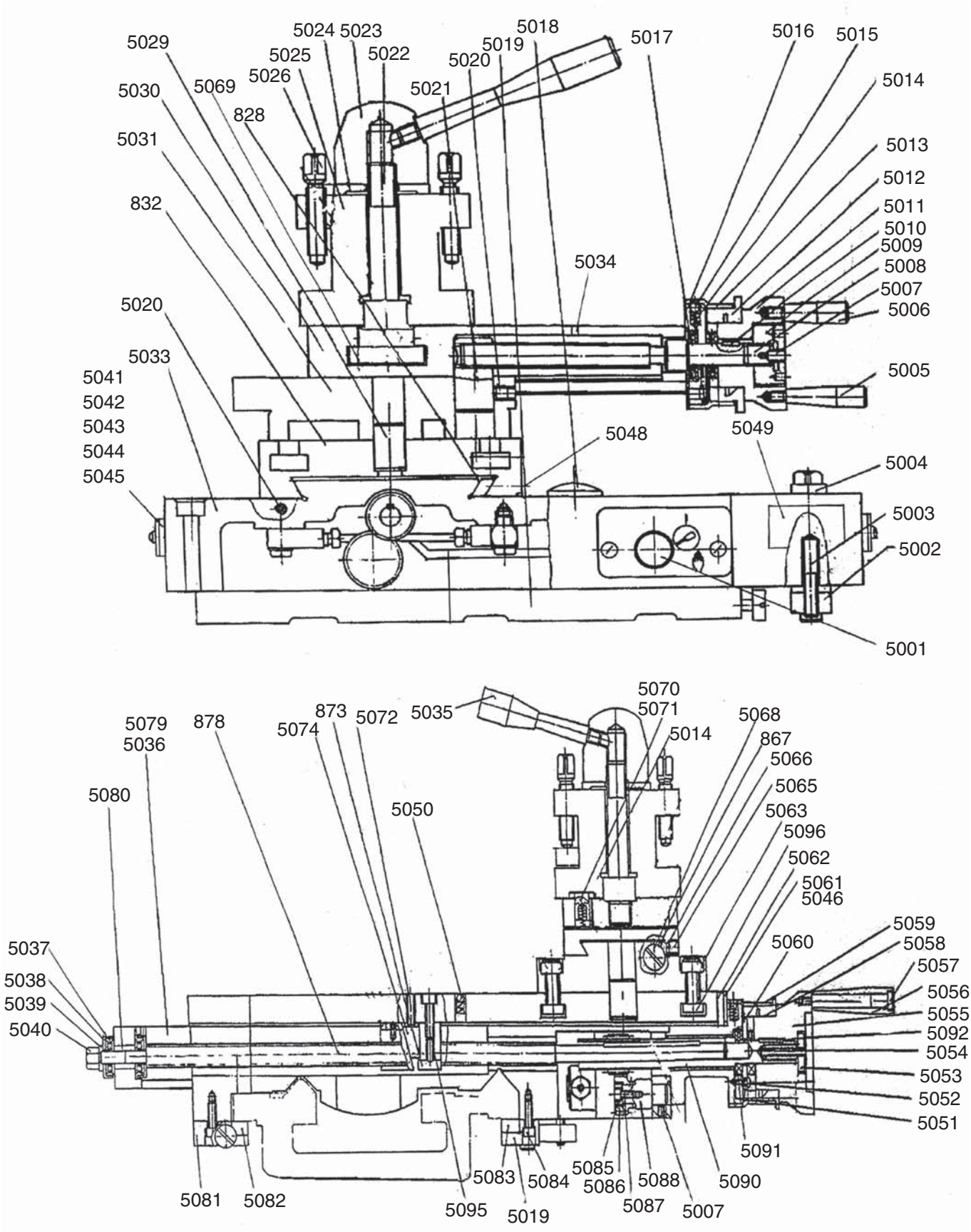
Apron Parts List

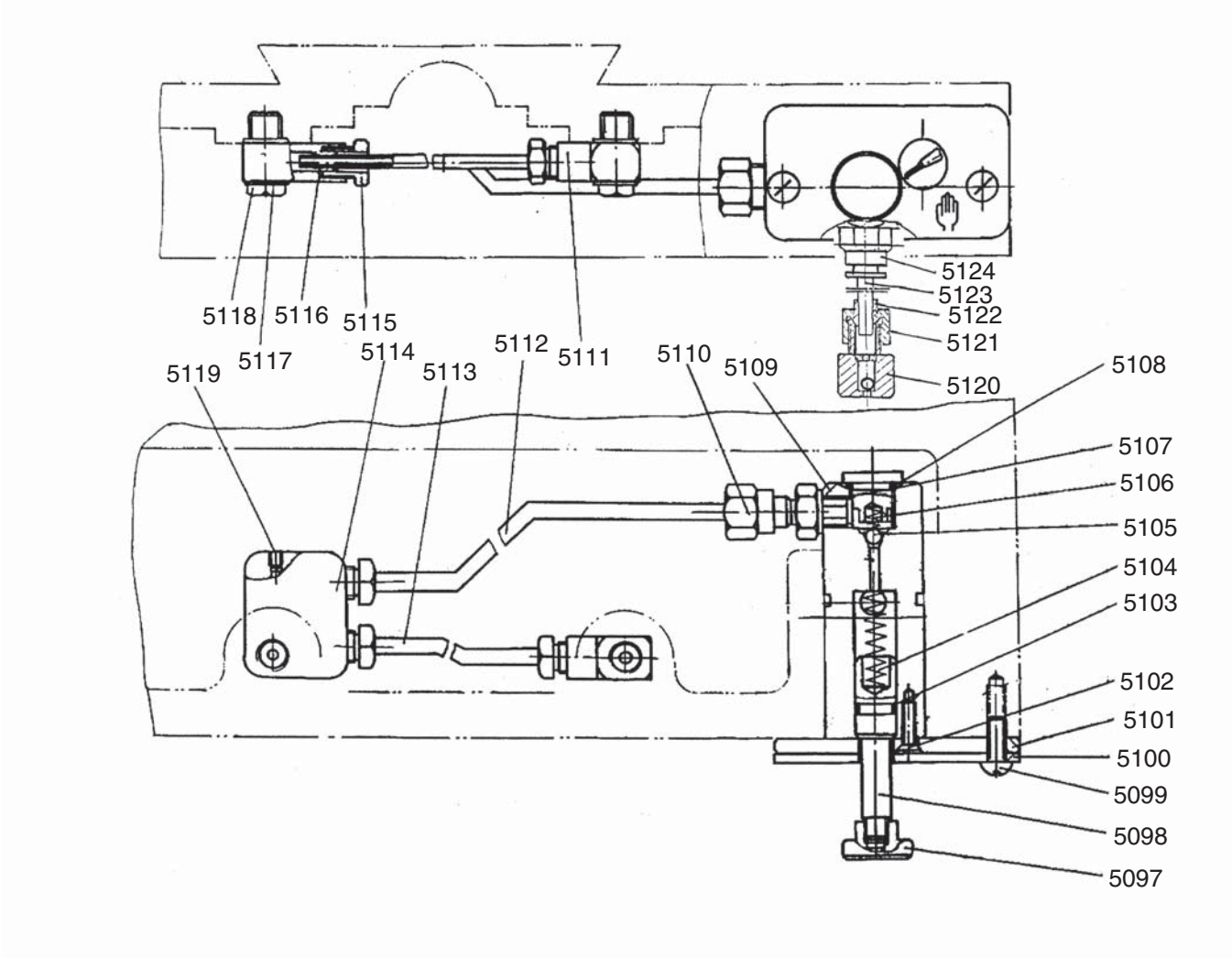
REF	PART #	DESCRIPTION
619	P05090619	SHAFT
631	P05090631	SHAFT
4001	P05094001	APRON CASTING
4002	P05094002	SHAFT
4003	PSB38M	CAP SCREW M5-.8 X 25
4006	P05094006	NAME PLATE
4007	P05094007	SLEEVE
4008	P05094008	HANDLE
4009	P05094009	CAP SCREW
4010	P05094010	HAND WHEEL
4011	P05094011	DIAL
4012	P05092156	STEEL BALL 6.5MM
4013	P05094013	COMPRESSION SPRING
4014	P05094014	SCREW PLUG
4015	PSS24M	SET SCREW M5-.8 X 25
4016	P05094016	WOODRUFF KEY 5 X 6.5 X 16MM
4017	P05094017	GEAR 81-TOOTH
4018	PSB04M	CAP SCREW M6-1 X 10
4020	PK147M	KEY 6 X 6 X 18MM
4021	P05094021	GEAR 80/60-TOOTH
4022	P05094022	GEAR 72/60-TOOTH
4023	P05094023	DOWEL PIN 4 X 20mm
4024	P05094024	SHAFT
4025	P05094025	LEVER HUB
4026	P05094026	SLEEVE
4027	P05094027	LEVER
4028	PRP88M	ROLL PIN 5 X 22MM
4029	P05094029	GEAR 18-TOOTH
4030	P05094030	O-RING 11.2 X 2.65MM
4032	PRP88M	ROLL PIN 5 X 22MM
4033	P05094033	SHAFT
4034	PR06M	EXT RETAINING RING 16MM
4035	P05094035	INDICATOR PLATE
4036	P05094036	RIVET 2 X 6MM
4037	P05094037	SHAFT
4038	P05094038	O-RING 25.8 X 3.55MM
4039	P05094039	SLEEVE
4040	P05094040	O-RING 16 X 1.8MM
4041	P05094041	PLUG
4043	PEC015M	E-CLIP 8MM
4044	PSB52M	CAP SCREW M8-1.25 X 10
4045	PRP29M	ROLL PIN 5 X 45MM
4046	P05094046	SHAFT
4047	P05094047	LEVER HUB
4048	P05094048	HANDLE
4049	P05094030	O-RING 11.2 X 2.65MM
4050	P05094050	THRUST WASHER

REF	PART #	DESCRIPTION
4051	P05094051	BEVEL-DRIVE GEAR 23-TOOTH
4052	PSB24M	CAP SCREW M5-.8 X 16
4053	P05094053	GIB
4054	PSS26M	SET SCREW M5-.8 X 6
4055	P05094055	CAP SCREW
4056	P05094056	LEVER
4057	P05094057	WORM GEAR BRACKET
4058	P05094058	SPINDLE CONTROL LEVER
4059	P05094059	DOWEL PIN 8 X 60MM
4060	PSB01M	CAP SCREW M6-1 X 16
4061	P05094061	GEAR 18/60-TOOTH
4062	P05094062	KEY
4064	P05094064	BALL OILER 8MM
4065	P05094065	VALVE
4066	P05093090	SIGHT GLASS 20MM
4067	P05094067	CASTING
4068	P05094068	HALF BRACKET
4069	P05094069	STOP
4070	P05094070	GEAR SHAFT 14-TOOTH
4071	PSS02M	SET SCREW M6-1 X 6
4072	PSB78M	CAP SCREW M5-.8 X 40
4073	P05094073	PLUG
4074	P05094074	FORK
4075	PRP73M	ROLL PIN 4 X 30MM
4076	P05094076	PACKING
4077	PSB17M	CAP SCREW M4-.7 X 10
4078	P05094078	COVER
4079	P05094079	SHAFT
4080	P05094080	BEVEL-DRIVE GEAR 64-TOOTH
4081	P05094081	THRUST WASHER
4082	P05094082	GEAR 18-TOOTH
4083	PK10M	KEY 5 X 5 X 12MM
4084	P05094084	BOTTOM PLATE
4085	P05094085	PACKING
4086	P05094086	O-RING 17 X 2.65MM
4087	PSB35M	CAP SCREW M8-1.25 X 60
4088	P05094088	GEAR 18-TOOTH
4089	P8106	THRUST BEARING 8106
4090	P05094090	NEEDLE BEARING
4091	PR15M	EXT RETAINING RING 30MM
4092	PS38M	PHLP HD SCR M4-.7 X 10
4102	P05094102	HALF NUT
4103	PB02M	HEX BOLT M6-1 X 12
4104	PB04M	HEX BOLT M6-1 X 10
4105	P05094105	INPUT BUSHING
4106	PFH06M	FLAT HD SCR M6-1 X 20

Cross Slide, Compound Rest, Oil Pump



Oil Pump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Cross Slide, Compound Rest, & Oil Pump Parts List

REF	PART #	DESCRIPTION
828	P0509828	GIB
832	P0509832	COVER-CROSS SLIDING
867	P05090867	GIB
873	P05090873	HALF NUT
878	P05090878	FEED SCREW
5001	P05095001	PUMP BODY
5002	P05095002	CLAMP BLOCK
5003	P05095003	SUPPORT SCREW
5004	P05095004	CLAMP SCREW
5005	P05095005	HANDLE
5006	P05095006	HANDLE
5007	PSB68M	CAP SCREW M6-1 X 8
5008	P05095008	FEED SCREW
5009	P05095009	PLUG
5010	PK69M	KEY 4 X 4 X 12MM
5011	P05095011	HANDLE
5012	P05095012	DIAL-COMPOUND REST
5013	P05095013	STEEL BALL
5014	P05095014	COMPRESSION SPRING 0.5 X 5 X 18
5015	P05093077	STEEL BALL 6MM
5016	P05095016	SEAT
5017	P8101	THRUST BEARING 8101
5018	P05095018	PLUG
5019	P05095019	GIB
5020	PSS01M	SET SCREW M6-1 X 10
5021	P05095021	BLOCK NUT
5022	P05095022	TOOL POST SHAFT
5023	P05095023	CLAMPING HANDLE
5024	P05095024	RUB WASHER
5025	P05095025	TOOL POST ASSEMBLY
5026	P05095026	TOOLING SCREW M10-1.5 X 50
5029	P05095029	SHAFT
5030	P05095030	COMPOUND REST
5031	P05095031	SWIVEL TABLE
5033	P05095033	CARRIAGE
5034	P05095034	BALL OILER 6MM
5035	P05095035	CLAMP HANDLE
5036	PSS09M	SET SCREW M8-1.25 X 20
5037	P8100	THRUST BEARING 8100
5038	P05095038	BEARING COVER
5039	P05095039	BRACKET
5040	P05095040	CLAMPING NUT M10-1.5
5041	P05095041	WIPER
5042	P05095042	WIPER COVER
5043	PSB24M	CAP SCREW M5-.8 X 16
5044	P05095044	WIPER
5045	P05095045	WIPER COVER
5046	PSB33M	CAP SCREW M5-.8 X 12
5048	PSB11M	CAP SCREW M8-1.25 X 16
5049	P05095049	PLATE

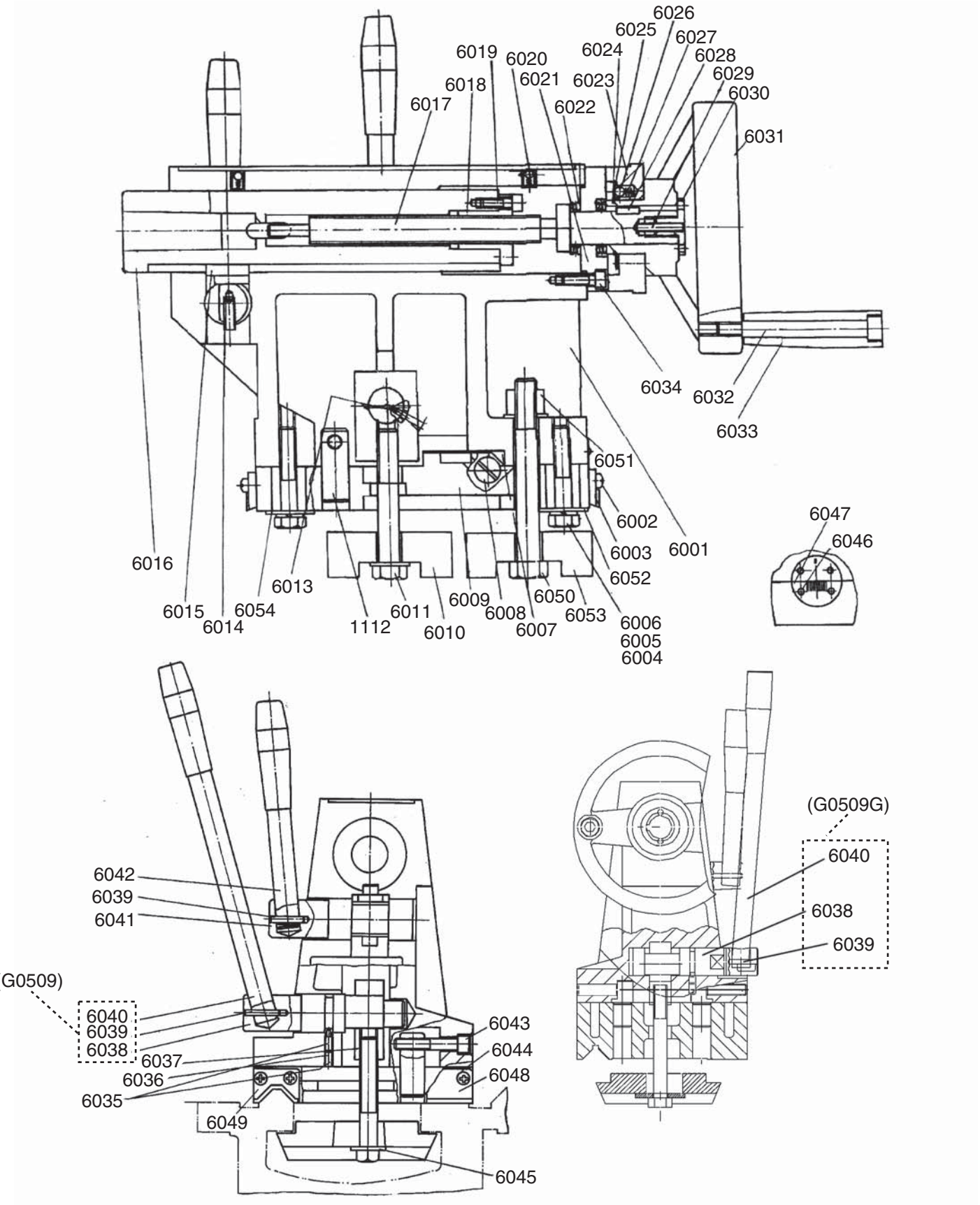
REF	PART #	DESCRIPTION
5050	P05094064	BALL OILER 8MM
5051	P05095051	BRACKET
5052	PSB17M	CAP SCREW M4-.7 X 10
5053	P05095053	CLAMP SCREW
5054	PS31M	PHLP HD SCR M6-1 X 35
5055	P05095055	WHEEL
5056	P05095056	HANDLE SPACER
5057	P05095057	SHOULDER SCREW
5058	P05095058	FEED DIAL
5059	P05095059	HANDLE SPACER
5060	P05095060	THRUST WASHER
5061	P05095061	WIPER COVER
5062	P05095062	WIPER
5063	PN02M	HEX NUT M10-1.5
5065	PSS20M	SET SCREW M8-1.25 X 8
5066	P05095066	BASE
5068	P05095068	GIB SCREW
5069	P05095069	SLEEVE
5070	P05095070	BUSHING
5071	P05095071	DETENT PIN
5072	PSS25M	SET SCREW M6-1 X 20
5074	P05095074	BRACKET
5079	P05095079	BRACKET
5080	P05095080	SPACER
5081	P05095081	GIB
5082	P05095082	GIB
5083	P05095083	GIB
5084	PSB02M	CAP SCREW M6-1 X 20
5085	P05095085	THRUST WASHER
5086	P05095086	GEAR 25-TOOTH
5087	PSB50M	CAP SCREW M5-.8 X 10
5088	P05095088	SHAFT
5090	P05095090	GEAR SHAFT 16-TOOTH
5091	P8103	THRUST BEARING 8103
5092	PK96M	KEY 3 X 3 X 20MM
5095	PSB06M	CAP SCREW M6-1 X 25
5096	P05095096	T-BOLT M10-1.5 X 25
5097	P05095097	KNOB
5098	P05095098	PISTON
5099	P05095099	DOME HD SCR M5-.8 X 15
5100	P05095100	PUMP INDICATOR PLATE
5101	P05095101	PLATE
5102	PFH05M	FLAT HD SCR M5-.8 X 12
5103	P05095103	O-RING 8 X 2.65MM
5104	P05095104	COMPRESSION SPRING 1 X 7 X 45MM
5105	P05095105	STEEL BALL 5MM
5106	P05095106	COMPRESSION SPRING 0.5 X 4 X 15MM
5107	P05095107	PLUG
5108	P05095108	O-RING 11.2 X 1.8MM

Cross Slide, Compound Rest, & Oil Pump Parts List

REF	PART #	DESCRIPTION
5109	P05095109	PUMP
5110	P05095110	BRASS FITTING
5111	P05095111	TUBE JOINT
5112	P05095112	LUBE TUBE 5MM
5113	P05095112	LUBE TUBE 5MM
5114	P05095114	DISTRIBUTOR
5115	P05095115	BRASS FITTING
5116	P05095116	DOUBLE TAPER SHEATH

REF	PART #	DESCRIPTION
5117	P05095117	SEALING WASHER 10MM
5118	P05095118	SPECIAL PORT BOLT
5119	PSS08M	SET SCREW M4-.7 X 5
5120	P05095120	VALVE
5121	P05095121	BRASS FITTING NUT
5122	P05095122	BRASS FITTING
5123	P05095123	LUBE TUBE 6 X 150MM
5124	P05095124	BRASS FITTING

Tailstock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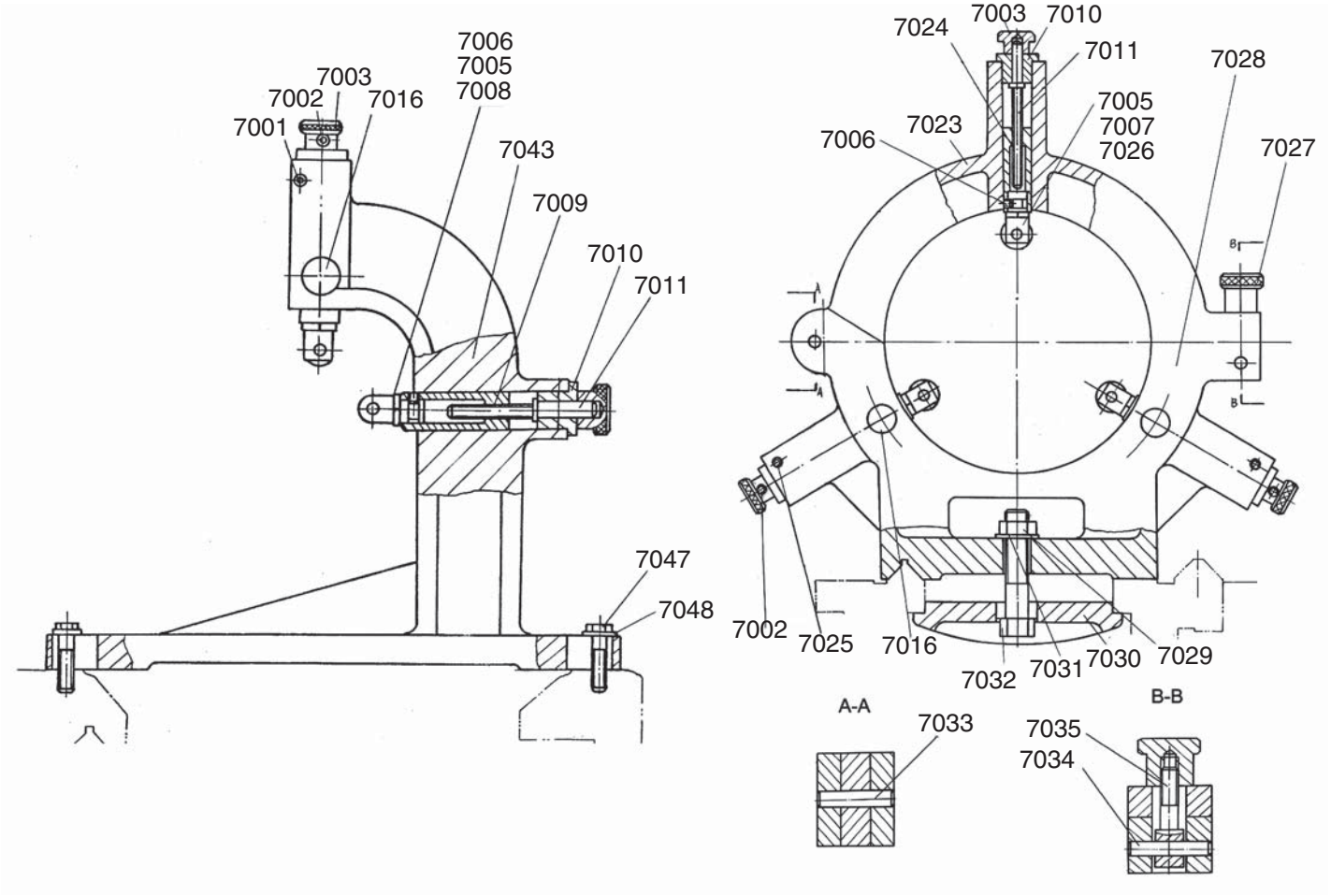
Tailstock Parts List

REF	PART #	DESCRIPTION
1112	P05091112	SHAFT
6001	P05096001	TAILSTOCK (G0509)
	P0509G6001	TAILSTOCK (G0509G)
6002	PS38M	PHLP HD SCR M4-.7 X 10
6003	P05096003	BEDWAY WIPER
6004	PB116M	HEX BOLT M10-1.5 X 45
6005	PLW06M	LOCK WASHER 10MM
6006	PLW06M	LOCK WASHER 10MM
6007	P05096007	GIB
6008	P05096008	GIB SCREW
6009	P05096009	TAIL STOCK BASE (G0509)
	P0509G6009	TAIL STOCK BASE (G0509G)
6010	P05096010	CLAMPING BLOCK
6011	PB121M	HEX BOLT M12-1.75 X 100
6013	PRP24M	ROLL PIN 5 X 16MM
6014	PSS64M	SET SCREW M6-1 X 15
6015	P05096015	KEY
6016	P05096016	QUILL (G0509)
	P0509G6016	QUILL (G0509G)
6017	P05096017	FEED SCREW (G0509)
	P0509G6017	FEED SCREW (G0509G)
6018	P05096018	FEED NUT
6019	PSS11M	SET SCREW M6-1 X 16
6020	P05094064	BALL OILER 8MM
6021	P05096021	BRACKET
6022	P8104	THRUST BEARING 8104
6023	P05096023	DIAL
6024	PR37M	EXT RETAINING RING 32MM
6025	P05096025	SEALING RING
6026	P05092156	STEEL BALL 6.5MM
6027	P05096027	FLAT SPRING 0.6 X 5 X 16MM

REF	PART #	DESCRIPTION
6028	PK23M	KEY 5 X 5 X 25MM
6029	PSS24M	SET SCREW M5-.8 X 25
6030	P05096030	PLUG
6031	P05096031	HAND WHEEL
6032	P05096032	SHOULDER BOLT
6033	P05096033	HANDLE
6034	PSB15M	CAP SCREW M5-.8 X 20
6035	PSS01M	SET SCREW M6-1 X 10
6036	PSS01M	SET SCREW M6-1 X 10
6037	P05096037	ADJUSTING BLOCK
6038	P05096038	CLAMPING HUB (G0509)
	P0509G6038	RECIEVER HUB (G0509G)
6039	PRP56M	ROLL PIN 4 X 25MM
	PK23M	KEY 5 X 5 X 25 (G0509G)
6040	P05096040	LEVER (G0509)
	P0509G6040	LEVER (G0509G)
6041	P05096041	SHAFT
6042	P05096042	LEVER
6043	PSB05M	CAP SCREW M8-1.25 X 50
6044	P05096044	BEDWAY WIPER
6045	PW06M	FLAT WASHER 12MM
6046	P05096046	RIVET 2 X 8MM
6047	P05096047	OFFSET INDICATOR PLATE
6048	P05096048	BEDWAY WIPER PLATE
6049	P05096049	BEDWAY WIPER PLATE
6050	PB76M	HEX BOLT M12-1.75 X 110
6051	P05096051	HIGH NUT M12-1.75
6052	PW04M	FLAT WASHER 10MM
6053	P05096053	CLAMPING BLOCK
6054	PW04M	FLAT WASHER 10MM

Steady Rest & Follow Rest

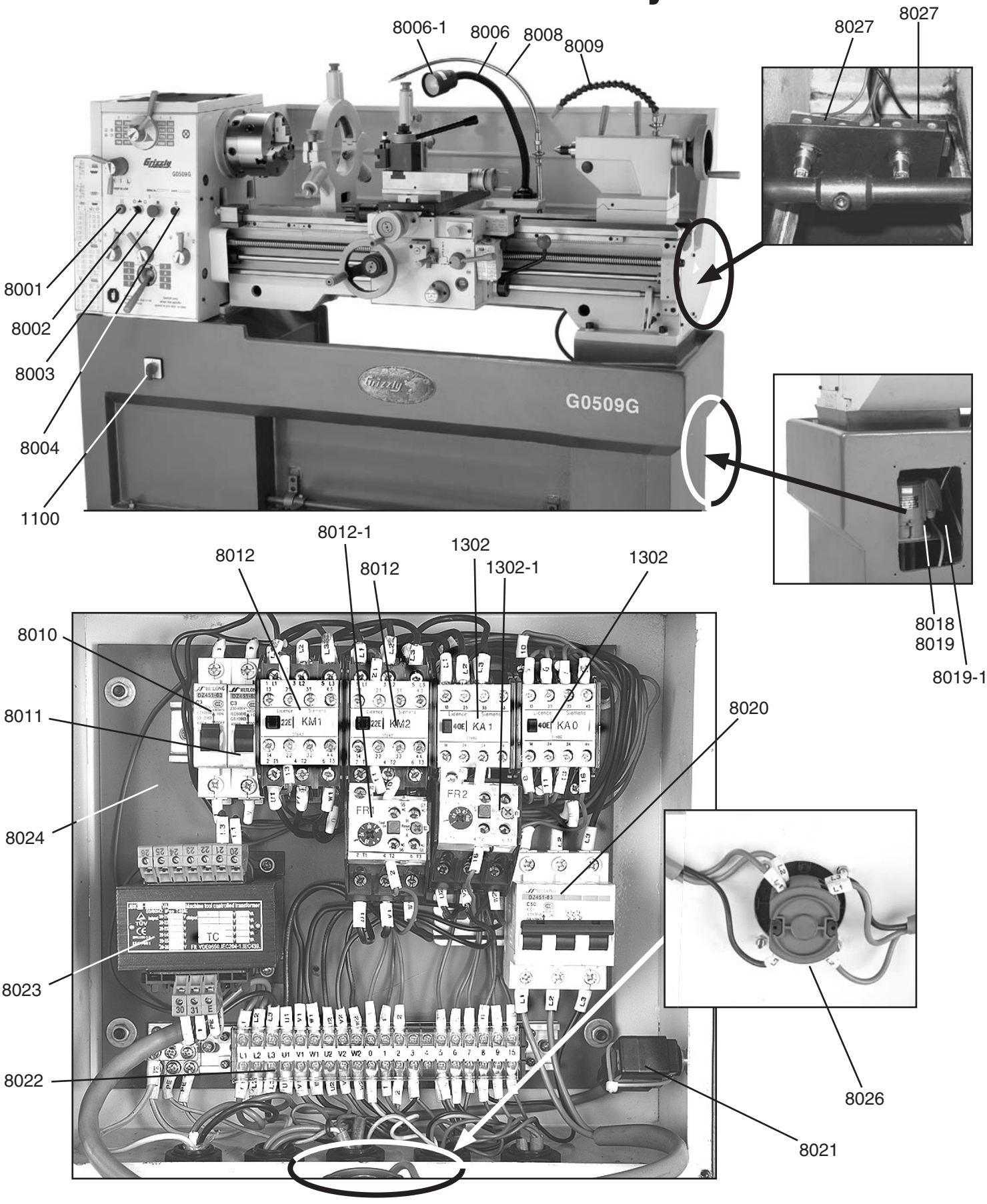


Steady Rest & Follow Rest Parts List

REF	PART #	DESCRIPTION
7001	PRP26M	ROLL PIN 5 X 26MM
7002	PSS03M	SET SCREW M6-1 X 8
7003	P05097003	KNURLED KNOB
7005	P05097005	SUPPORT SHAFT
7006	PSS02M	SET SCREW M6-1 X 6
7007	P05097007	BALL BEARING W/WHEEL
7008	P626ZZ	BALL BEARING 626ZZ
7009	P05097009	SLEEVE
7010	P05097010	FLANGE BUSHING
7011	P05097011	SCREW SHAFT
7016	P05097016	KNURLED THUMB KNOB M10-1.5 X 25
7023	P05097023	UPPER CASTING
7024	P05097024	SLEEVE

REF	PART #	DESCRIPTION
7028	P05097028	LOWER CASTING
7027	P05097027	LARGE KNURLED KNOB
7029	PN13M	HEX NUT M16-2
7030	P05097030	CLAMPING BRACKET
7031	PW08M	FLAT WASHER 16MM
7032	PB159M	HEX BOLT M16-2 X 80
7025	PRP45M	ROLL PIN 5 X 32MM
7033	P05097033	DOWEL PIN 10 X 50MM
7035	P05097035	CLAMPING SCREW
7034	PRP80M	ROLL PIN 10 X 50mm
7043	P05097043	FOLLOW REST CASTING
7047	PSB47M	CAP SCREW M10-1.5 X 40
7048	PW04M	FLAT WASHER 10MM

Electrical & Coolant System

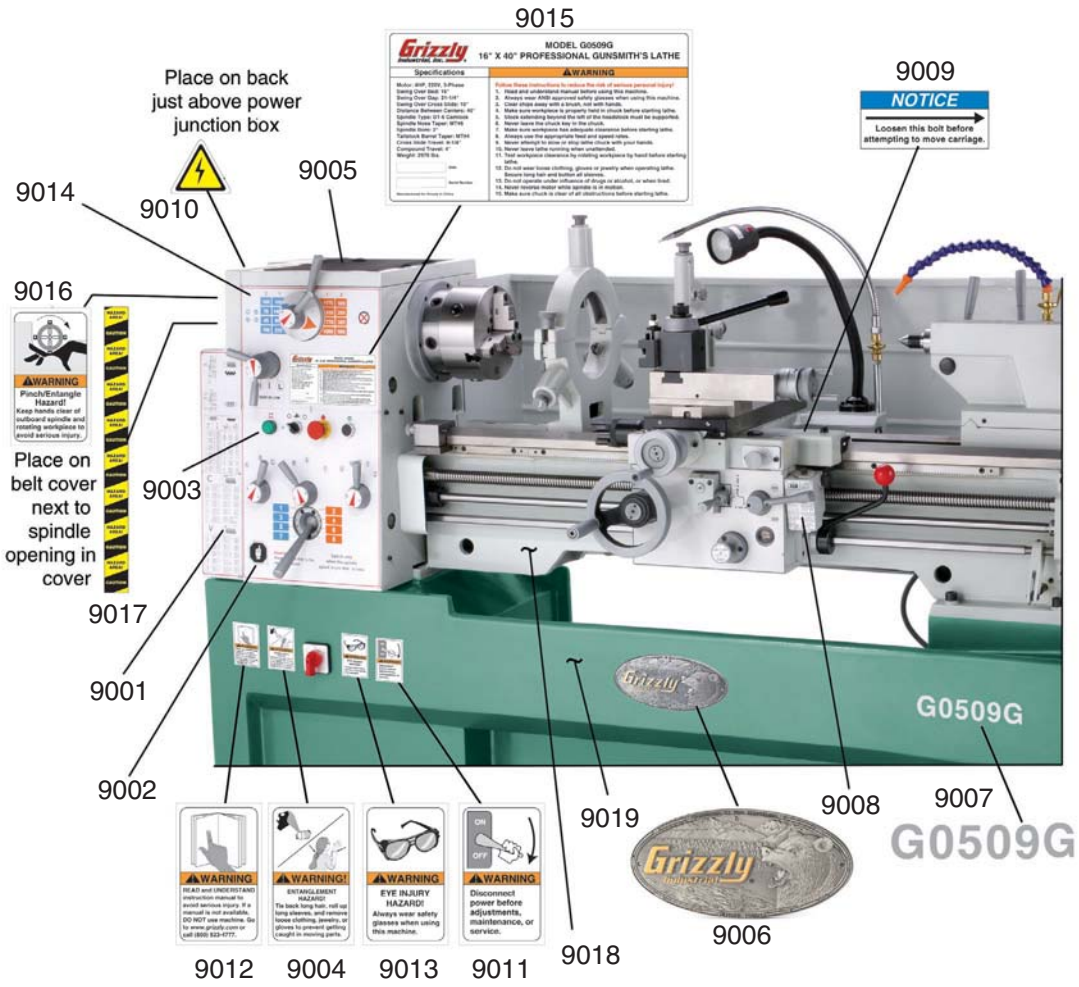


Electrical & Coolant System Parts List

REF	PART #	DESCRIPTION
1100	P05091100	TWO-SPEED SWITCH
1302	P05091302	CONTACTOR SIEMENS 40E, 24V
1302-1	P05091302-1	THERMAL RELAY SIEMENS, 0.05-0.32 AMP
8001	P05098001	POWER LAMP
8002	P05098002	PUMP SWITCH
8003	P05098003	EMERGENCY STOP SWITCH
8004	P05098004	JOG BUTTON
8006	P05098006	WORK LAMP ASSEMBLY
8006-1	P05098006-1	BULB
8008	P05098008	CUTTING FLUID TUBE KIT
8009	P0509G8009	TAILSTOCK FLUID TUBE KIT (G0509G)
8010	P05098010	FUSE HOUSING
8011	P05098011	FUSE HOUSING

REF	PART #	DESCRIPTION
8012	P05098012	CONTACTOR SIEMENS 22E, 24V
8012-1	P05098012-1	THERMAL RELAY SIEMENS, 3UA52 10-16 AMP
8018	P05098018	PUMP
8019	P05098019	PUMP MOTOR 220V 3-PH
8019-1	P05098019-1	PUMP POWER CORD ASSY
8020	P05098020	CIRCUIT BREAKER SET
8021	P05098021	LIMIT SWITCH
8022	P05098022	40-POST TERMINAL BLOCK
8023	P05098023	TRANSFORMER
8024	P05098024	MAIN POWER BOX
8026	P05098026	MAIN POWER ON/OFF SWITCH
8027	P05098027	MOTOR ROTATION LIMIT SWITCH

Labels & Placement



Labels Parts List

REF	PART #	DESCRIPTION
9001	P05099001	THREADING CHART
9002	P05099002	GEARBOX PANEL
9003	P05099003	SWITCH PANEL
9004	P05099004	ENTANGLEMENT SLEEVES LABEL
9005	P05099005	RUBBER MAT
9006	G8589	GRIZZLY LOGO PLATE
9007	P05099007	MODEL NUMBER LABEL (G0509)
	P0509G9007	MODEL NUMBER LABEL (G0509G)
9008	P05099008	THREAD DIAL CHART
9009	P05099009	UNLOCK CARRIAGE LABEL
9010	PLABEL-14	ELECTRICITY LABEL

REF	PART #	DESCRIPTION
9011	PLABEL-36	DISCONNECT POWER LABEL
9012	PLABEL-12	READ MANUAL LABEL
9013	PLABEL-11	SAFETY GLASSES LABEL
9014	P05099014	HEADSTOCK PANEL
9015	P05099015	DATA LABEL (G0509)
	P0509G9015	DATA LABEL (G0509G)
9016	P0509G9016	ENTANGLEMENT LABEL (G0509G)
9017	P0509G9017	WARNING TAPE (G0509G)
9018	PPAINT-9	GRAY TOUCH-UP PAINT
9019	PPAINT-1	GREEN TOUCH-UP PAINT

⚠WARNING

Safety labels warn about machine hazards and ways to prevent injury. The owner of this machine MUST maintain the original location and readability of the labels on the machine. If any label is removed or becomes unreadable, REPLACE that label before using the machine again. Contact Grizzly at (800) 523-4777 or www.grizzly.com to order new labels.

WARRANTY AND RETURNS

Grizzly Industrial, Inc. warrants every product it sells for a period of **1 year** to the original purchaser from the date of purchase. This warranty does not apply to defects due directly or indirectly to misuse, abuse, negligence, accidents, repairs or alterations or lack of maintenance. This is Grizzly's sole written warranty and any and all warranties that may be implied by law, including any merchantability or fitness, for any particular purpose, are hereby limited to the duration of this written warranty. We do not warrant or represent that the merchandise complies with the provisions of any law or acts unless the manufacturer so warrants. In no event shall Grizzly's liability under this warranty exceed the purchase price paid for the product and any legal actions brought against Grizzly shall be tried in the State of Washington, County of Whatcom.

We shall in no event be liable for death, injuries to persons or property or for incidental, contingent, special, or consequential damages arising from the use of our products.

To take advantage of this warranty, contact us by mail or phone and give us all the details. We will then issue you a "Return Number,'' which must be clearly posted on the outside as well as the inside of the carton. We will not accept any item back without this number. Proof of purchase must accompany the merchandise.

The manufacturers reserve the right to change specifications at any time because they constantly strive to achieve better quality equipment. We make every effort to ensure that our products meet high quality and durability standards and we hope you never need to use this warranty.

Please feel free to write or call us if you have any questions about the machine or the manual.

Thank you again for your business and continued support. We hope to serve you again soon.

Grizzly Industrial, Inc. WARRANTY CARD

Name _____

Street _____

City _____ State _____ Zip _____

Phone # _____ Email _____ Invoice # _____

Model # _____ Order # _____ Serial # _____

The following information is given on a voluntary basis. It will be used for marketing purposes to help us develop better products and services. ***Of course, all information is strictly confidential.***

1. How did you learn about us?

____ Advertisement	____ Friend	____ Catalog
____ Card Deck	____ Website	____ Other:

2. Which of the following magazines do you subscribe to?

____ Cabinet Maker	____ Popular Mechanics	____ Today's Homeowner
____ Family Handyman	____ Popular Science	____ Wood
____ Hand Loader	____ Popular Woodworking	____ Wooden Boat
____ Handy	____ Practical Homeowner	____ Woodshop News
____ Home Shop Machinist	____ Precision Shooter	____ Woodsmith
____ Journal of Light Cont.	____ Projects in Metal	____ Woodwork
____ Live Steam	____ RC Modeler	____ Woodworker West
____ Model Airplane News	____ Rifle	____ Woodworker's Journal
____ Modeltec	____ Shop Notes	____ Other:
____ Old House Journal	____ Shotgun News	

3. What is your annual household income?

____ $20,000-$29,000	____ $30,000-$39,000	____ $40,000-$49,000
____ $50,000-$59,000	____ $60,000-$69,000	____ $70,000+

4. What is your age group?

____ 20-29	____ 30-39	____ 40-49
____ 50-59	____ 60-69	____ 70+

5. How long have you been a woodworker/metalworker?

____ 0-2 Years ____ 2-8 Years ____ 8-20 Years ____ 20+ Years

6. How many of your machines or tools are Grizzly?

____ 0-2 ____ 3-5 ____ 6-9 ____ 10+

7. Do you think your machine represents a good value? _____Yes _____No

8. Would you recommend Grizzly Industrial to a friend? _____Yes _____No

9. Would you allow us to use your name as a reference for Grizzly customers in your area?
Note: *We never use names more than 3 times.* _____Yes _____No

10. Comments: _____

_____

_____

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